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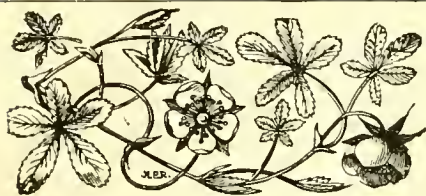
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THE Gardeners' Chronicle

No. 1749.—SATURDAY, JULY 3, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.3°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, June 30, 10 a.m.: Bar 29.9 temp. 60°. Weather—Cloudy.

The Palms of the Philippines,*

The Palms of the Philippine Islands are remarkable by reason of the fact, to which Prof. Beccari draws attention, that of the 120 indigenous species, over 100 are endemic. The non-endemic element comprises species growing in swamps or at the mouths of rivers and along the coasts of neighbouring countries. They include *Oncosperma filamentosum*, *O. horridum*, *Caryota mitis*, *Licuala spinosa*, *Nipa fruticans*, *Korthalsia laciniata* and 3 species of *Calamus*. Certain other of the non-endemic species have probably been introduced by man. Generally speaking the Philippine endemic species are members of genera found in the Malay Peninsula, the Malayan Islands and in Cochinchina, and among such genera are *Areca*, *Pinanga*, *Arenga*, *Caryota*, *Oncosperma*, *Livistona*, *Calamus*, etc. One genus only, *Adonidia*, appears to be exclusively Philippine. Not a few genera common in Malaya are unrepresented in these islands, for example, *Iguanura*. The dominant genera are *Areca*, *Pinanga*, *Calamus* and *Daemonorops*, which furnish two-thirds of the dominant species of the Philippine Palms. Of the thirty-six known species of *Areca*, ten are very characteristic of the Philippines' Palms flora, and Prof. Beccari believes that the species *Areca Catechu* acquired its actual

specific characters in the Philippine Islands, and also that the genus has found there more favourable evolutionary conditions than it has encountered elsewhere. In the genus *Pinanga*, of which 25 per cent. of the eighty known species is endemic, there are, however, no such conspicuous or anomalous Philippine species as occur in *Areca*.

From his detailed study of the species the author reaches the conclusion that the Philippine Palms have in large measure originated in the archipelago, though they may be traced to ancestral forms native of Borneo, Celebes, the Moluccas and Indo-China. To make up the present assemblage must be added but a dozen species possessed of adaptation for ready dissemination, and, hence, of wide geographic range, and also a Polynesian element represented by the genera *Adonidia* and *Heterospatha*. Though the islands have not "created" new genera—with the possible exception of the new monotypic genus *Adonidia* peculiar to the archipelago, these islands have admitted of the modification of certain genera and, hence, of the origination of numerous species. Prof. Beccari's paper concludes with an enumeration of the Palms indigenous to or naturalised in the Philippine Islands. In his note accompanying the enumeration, attention is drawn to the fact that not only are nine of the ten Philippine species of *Areca* endemic, but also that the endemic species contain each distinct varieties.

"Stripe" Disease of Tomatos.

The well-known and destructive malady of Tomatos named "stripe" disease is under investigation * by Messrs. Paine and Bewley at the Experimental Station, Cheshunt, Hertfordshire. The brown stripes on the stem, brown sunken patches on the fruit, and shrivelled areas on the leaves suffice to indicate the presence of this disease, the agent of which is a small bacillus closely related to, if not identical with, *Bacillus Lathyrus*, which causes a stripe disease of Sweet Peas. It is noteworthy that certain varieties of Tomato are markedly more susceptible than others; for example, *Kondine Red* and *Comet* are more seriously attacked than is *Ailsa Craig*. Manuring may also affect the susceptibility of a variety—too much nitrogenous manure and a deficiency of potash lower the resistance of a plant; but the adverse effect of excess of nitrogen may be to some extent counteracted by an increase of potash—an observation which growers of Tomato and other plants under glass would do well to profit by. Inasmuch as bacteria have been found in the fruit it is probable that this disease is spread by the use of seed from infected plants, for there is every probability that if the fruit is infected bacteria may adhere to the seed coat. Another mode of infection is probably by pruning and pinching; the knife or fingers used for stopping or pinching a diseased plant would almost certainly, unless disinfected, transfer the bacteria to the other plants dealt with. For this reason prunings should be burned and the soil in houses in which the disease has appeared should be sterilised. Perhaps the most important point to be observed in combating this disease is to encourage a hard, as opposed to a soft, growth in plants showing symptoms of the disease.

Horticultural Exhibitions at Antwerp.—M. Chas. Bosschire informs us the special horticultural exhibitions held during July in connection with the Antwerp Fêtes will be as follows:—

Carnations, July 5 to 6; Roses and Floral Art, July 10 to 13; Begonias and Gloxinias, July 17 to 21; Floral Art, July 25 to 27.

New Public Park for Girvan.—In a letter from his factor to the Town Council of Girvan, Colonel North Dalrymple Hamilton, of Bargany, offered to give the town a piece of land about ten acres in extent as a park for the burgh at a nominal rent of 1s. per annum. The Town Council unanimously agreed to accept Colonel Hamilton's generous gift, and have accorded him their hearty thanks on behalf of the community.

Kent Commercial Fruit Show.—We are glad to learn that the Kent Commercial Fruit Show will be held at Maidstone on October 26, 27 and 28, 1920, and that the schedule of prizes is in course of preparation. All correspondence concerning this exhibition should be sent to Mr. W. Miskin, The College, Wye, Kent.

Revival of the Hereford and West of England Rose Society.—After a lapse of six years, it has been decided to again hold the annual show of this popular society in the Shirehall, Hereford, on Wednesday, July 21, 1920. The schedule of prizes has been issued and copies may be obtained on application to the Rev. C. H. Stoker, Brinsop Vicarage, Hereford, who is the honorary secretary.

Cereal Crops in the United States.—Advices received from the International Agricultural Institute at Rome indicate that in the United States of America the yield of Wheat in 1920 is expected to be 97,600,000 quarters, this being 83 per cent. of last year's crop and 95 per cent. of the average of the five previous years; Rye is expected to yield 9,300,000 quarters, or 90 per cent. of last year's and 133 per cent. of the average; the Barley crop is estimated at 22,200,000 quarters, or 112 per cent. of last year's and 86 per cent. of the average. The condition of Cereals on the 1st of June was good in Canada, average in Italy and Switzerland, and poor in Hungary.

Importation of Gooseberries.—The importation of Gooseberries into England and Wales has, since 1919, been permitted only under licence from the Ministry of Agriculture and Fisheries. The Board of Agriculture for Scotland have now issued an Order applying similar restrictions to the importation of Gooseberries into Scotland. Gooseberries may only be imported through any port in Great Britain under the authority of a licence granted by the respective Department. Such licences are issued on condition that imported Gooseberries are inspected at the port of landing, and if passed by an inspector as free from American Gooseberry mildew, are sent direct from the port of landing to the jam manufacturers, whether in England and Wales or Scotland named in the licence. Applications for licences to import Gooseberries through English or Welsh ports should be addressed to the Ministry of Agriculture and Fisheries, 72, Victoria Street, London, S.W.

Historic Trees in Massachusetts.—An interesting table has come to our notice, prepared by Mr. J. R. Simmons, to illustrate a lecture given before the New England Historic Genealogical Society, and published in the *Boston Transcript*, showing in alphabetical order all the trees in the State of Massachusetts which have historic associations or are unique in size. The list is too long to quote in *extenso*, but we give a few items of special interest to English readers. The sizes given represent (a) circumference at breast-height; (b) height. There are the ancient Oaks at Wayside Inn, made famous in Longfellow's "Tales of a Wayside Inn," 18 feet 2½ inches, 65 feet; the Boxford Elm, East Boxford, which marks the place where the Indian Treaty was signed, 14 feet 4½ inches, 70 feet; the Buttonwood at Charlemont, under whose branches the first settlers slept, 16 feet, 98 feet; the Pear tree at Danversport, planted by John Endicott in 1630; Hawthorne's Grove, so-called on account of its being a favourite walk of the famous novelist; Island Grove, Abington, where the celebrated speeches in the cause of the abolition of slavery were made in 1846-65; the

* "The Palms of the Philippine Islands," by O. Beccari (Florence, Italy). *The Philippine Journal of Science*, Vol. 14, No. 3.

* *Journal of Ministry of Agriculture*, Vol. XXVI, No. 10.

Monroe Tavern Elm at East Lexington, to which horses were tied on the day of the Battle of Lexington; the favourite Pine of Oliver Wendell Holmes at Pittsfield, 16 feet 4 inches, 97 feet; and the Elm at Cambridge, under whose shade George Washington took command of the American Army, 18 feet, 95 feet. The list, which is compiled with the utmost care, does considerable credit to the industry and patriotism of the author, and will be of great value to American historians.

R.H.S. Provincial Exhibition at Cardiff.—The holding of a provincial exhibition by the Royal Horticultural Society is more or less in the nature of an experiment, for it is very many years since this Society held an exhibition out of the Metropolis. Cardiff is an important horticultural centre, and there is sure to be a keen local as well as general interest in the show. The Sophia Gardens are situated in the western part of the city, and are separated from the Earl of Bute's magnificent estate of Cardiff Castle, by the river Taff. The grounds, which are some 10-15 acres in extent, contain numerous trees, and there is a double avenue of Limes and Chestnuts leading from the main entrance. The wooded nature of the grounds will necessitate a distribution of the tents, of which there will be five, and we understand that sufficient exhibits will be forthcoming to entirely fill these. Horticultural sundries will be accommodated in the open. The exhibition will be held over three days, the 6th, 7th and 8th inst., and will be formally opened at 3 p.m. on the first day by Queen Victoria of Portugal, who will be accompanied by King Manoel, and Her Majesty will distribute the challenge cups offered for competition.

Gardeners' Royal Benevolent Institution.—The annual festival dinner of the Gardeners' Royal Benevolent Institution was held on Tuesday last, in the beautiful hall of the Grocers' Company, Prince's Street, City. The Duke of Connaught presided, and there was a notable gathering of horticulturists, the company numbering close on two hundred. During the course of the dinner the secretary, Mr. G. Ingram, made the gratifying announcement that the sum of £3,200 had been subscribed during the evening for the benefit of the fund. A detailed report of the proceedings will be published in our next issue.

Sweet Peas at Antwerp.—A notable exhibit at the show held at the Floral Hall, Parc des Rossignols, Antwerp, in connection with the Antwerp Fêtes, June 26-28, was a collection of Sweet Peas staged by Messrs. Sutton and Sons. The group occupied a space of 50 feet by 14 feet, and was arranged in semi-circular form, with a background of black velvet. Tall stands of varying height were utilised for the holding of the blooms, which represented the finest varieties in cultivation. The group was a centre of attraction, and at times the number of visitors were so numerous as to cause a dense crowd. The collection received the highest award of an *Objet d'Art* and the premier place in the Competition of Honour.

Transactions of the National Chrysanthemum Society.—The National Chrysanthemum Society is again in the happy position of being able to resume publication of its *Transactions*, which constitute a valuable record of the doings of the Chrysanthemum world, have an international reputation and circulate in all parts of the globe. The present number is for the years 1918 and 1919, and is, we believe, the first issued since the outbreak of the great war. If the interests of such flowers as the Chrysanthemum suffered during the war, it was because cultivators turned their attention to the more necessary work of food raising, and the special floral societies, with a fine sense of patriotism, encouraged their members in this direction. But the love of their favourite flowers remains, and such floricultural associations as the National Chrysanthemum Society will doubtless again enjoy in the near future a period of renewed prosperity, making for the advancement of horticulture and the good of the community generally. The prefatory note by the president, Sir Albert K. Rollit, is

full of encouragement, and his tribute to the officers of the Society, who have steered the association successfully through the troublesome past five years, is well merited. The matter in the issue under notice is largely statistical; it includes the Committee's report for the year 1919, and short reports of the activities of the societies affiliated with the N.C.S. A useful article from the pen of Mr. D. B. Crane, on the propagation of early-flowering Chrysanthemums, deals with the best methods of raising this useful section of the flower. In view of this article, the list of the best early-flowering Chrysanthemums, with a short description of each, will prove of value to growers. The long list of varieties that have received Awards since 1914 proves that raisers have been steadily following up their efforts in the improvement of this glorious autumn flower, and that the Society's Floral Committee has continued its excellent work in war time as in peace.

The Great Scottish Forest Fires.—A deluge of rain during June 26, 27 and 28 put an end to the devastating forest fires that had been raging in the North of Scotland for the previous fortnight, and which had defied the most strenuous efforts of hundreds of men to subdue. The intense heat was doubtless the prevailing cause of the many outbreaks on Deeside, along Strathspey, and throughout Inverness-shire. Nature, as experts well know, has not furnished these woodlands and moorlands with much protection against fire, and it would appear she considered the balance usually preserved between rain and drought as sufficient safeguard. Yet the danger is tremendous, and frequently recurs. The serious damage caused during the conflagration will in all probability never be fully estimated. In the famed Forest of Glen-tanar the fire broke out on Monday, June 14, and raged with unabated fury for nearly a fortnight. Not, indeed, till the heavy rains came were the fears of the workers allayed. Day after day the fire spread, defying the efforts of hundreds of fire-fighters, including the whole of the estate servants, and practically the whole of the male population of the surrounding villages and districts. Helpers came from all directions. H.M. the King sent every available man from his Highland home, Balmoral Castle: the Marquis of Aberdeen and Temair drove over with every retainer he could muster; the neighbouring proprietors, without exception, with their servants, hurried to the scene; a company of Gordon Highlanders was dispatched from Aberdeen; and all that human thought and ingenuity could devise was done to cope with the outbreak. The heather and brushwood was as dry as tinder, and the fire-beaters, when they thought they had mastered the fire, were dismayed to find it had broken out in another direction. One instance of the helplessness of the fire-fighters must suffice. At a certain point the fire was approaching a roadway running through the woods. Here it was felt a stand might be made, and an order was given to fell the intervening trees, drag them across the roadway and dig a deep trench. The task was accomplished with wonderful speed, and the perspiring workers rested a few moments to watch the results. Like a flicker on a cinema screen, the flames spanned the ditch and roadway. The various woods were absolutely imperceptible. Back-firing was then adopted, but the flames spread along the hill-sides, often not touching the undergrowth in their flight, but vaulting from tree-crown to tree-crown, and mocking all attempts to stop them. Thus the unequal fight went on, till, practically speaking, the fire almost burned itself out and rain fell. The fire presented a magnificent spectacle, but the wild creatures that had their homes in the devastated woods were terrified. The timid and gentle deer rushed out from the blazing mass, and rubbed shoulders with the fire-beaters. Then they would seem to lose their heads, and rush into the seething flames. The aftermath of a forest fire is a considerable financial and scenic loss. True, no grander or more terrible sight is known than a mighty blaze, which, especially at nightfall, impresses with an awe and majesty that only a great fire can command; but, like

so many other natural displays on a vast scale, moorland and forest pyrotechnics are attended by material loss which is deplorable, and, of course, wholly outweighs the momentary panoramic effect.

Proposed Restoration of the Botanic Garden at Uppsala.—The Linnean Society of London has received a communication from the Swedish Linnean Society regarding the proposed restoration of the old Botanic Garden at Uppsala with the house in it formerly occupied by Carl von Linné. As the London society is debarred by its Charters from making a direct grant to this praiseworthy object, assistance can only be given by private effort, and notwithstanding the numerous demands made at the present time, it is hoped that substantial assistance towards realising this memorial to Linneaus will be forthcoming. The general secretary of the Linnean Society will be glad to give further details or to forward gifts.

Appointments for the ensuing week.—Tuesday, Wednesday and Thursday, July 6, 7 and 8, Royal Horticultural Society's provincial show in the Sophia Gardens, Cardiff; Wednesday, July 7, Saltaire, Shipley and District Rose Society's show; Thursday, July 8, City of London Rose Society's exhibition at Cannon Street Hotel; Saturday, July 10, Finchley Horticultural Society's annual meeting.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Duration of Varieties.*—There seems little reason to doubt that varieties of most plants have a limited period of duration, which does not affect the species itself. Many of the fine old varieties of Pippins are becoming extinct; such as the well-known Golden Pippin, the old Kentish Pippin (the very finest flavoured Apple I have known), and some others. This peculiarity also affects the varieties of the Potato, for several kinds that were in high repute 30 years ago are now only known as having once been extensively cultivated, but are at present lost. In a work, the *Florists' Directory*, by James Maddock, 1792, are the following observations:—"The constitution of Anemones undergoes considerable changes with age, which is, perhaps, in a greater or smaller degree, the case with all other vegetables. The Anemone will not last more than 12 or 15 years without degenerating, unless it be frequently removed to a different soil and situation; nor will any removals protract or prolong its existence more than 30 or 40 years. It generally blows in its greatest degree of perfection from the fifth to the tenth or twelfth year, after which it becomes gradually smaller and weaker, and if the flower was originally very full and double, with age it loses that property; the petals diminish in number, become small and irregular, and finally the sort perishes. It has more than once occurred that the same sort, although in possession of many persons, residing at remote distances from each other, has been entirely lost in one season, without the possibility of accounting for the fact in any other manner than the above." In a footnote the author observes: "The *Ranunculus* will last about 20 to 25 years in perfection, after which it degenerates and perishes." It appears that this period of duration is confined only to seminal varieties of vegetables, for the original wild parent still continues to flourish, as it has done since its creation. *Lusor, Gard. Chron., July 5, 1845.*

Publications Received:—*Proceedings of the Academy of Natural Sciences of Philadelphia*, Part II., April-October, 1919. (Academy of Natural Sciences, Philadelphia, Pa., U.S.A.) *Dairy Barn and Milk House Arrangement*, by J. H. Frandsen and W. B. Nevins. (Agricultural Experiment Station, University of Nebraska, Lincoln, U.S.A.) *Beef Production*, by H. J. Gramlich (as above). *Supplementary Feeds in Fattening Lambs*, by H. J. Gramlich. (as above). *The Work of the Yuma Reclamation Project Experiment Farm in 1918*, by R. E. Blair (Bureau of Plant Industry, Washington, D.C., U.S.A.). *Annual Report of the Research Station, Long Ashton, Bristol*. (University of Bristol). Printed at the Herald Press, 12, North Gate, Bath.

THE ROSARY.

EARLY-FLOWERING RAMBLER ROSES.

To render the garden interesting and attractive over a long period it is wise to plant varieties of Roses that will bloom during a long season.

The following varieties were in full bloom on June 16, and in finer condition than during the past few years.

The first Rose to open its blossoms was Neige d'Avril, a French variety of the multiflora type. The blooms are semi-double, of medium size, pure white, with a full centre of yellow stamens. It is exceptionally free flowering and delightfully fragrant. This Rose deserves to be much more widely grown as it possesses all the attributes of a perfect Rambler.

Francois Guillot is faint yellow in the bud stage, opening to pure white. The blooms are freely produced. The growth is vigorous, with the true Wichuraiana foliage.

Another desirable white, early-flowering variety little known is Frau Octavia Hesse. The flower buds are cream coloured, but as they expand the bloom becomes pure white. In shape the flowers much resemble those of a Gardenia, and as they are usually borne singly they are most useful for wreaths and other floral designs.

Dr. W. Van Fleet, an American Rose of a delicate pink colour, is strong in growth and free flowering. The tiny buds are most shapely and so are the fully expanded blooms. This is a variety that attracts all who see it, and one that I place in the first six.

Amethyste belongs to the multiflora section, and attracts attention by reason of its colouring—crimson-purple. The blooms are freely borne in erect panicles. The habit of growth is all that could be desired.

Gardenia has rich yellow buds and pure white, fully-open blossoms. It flowers early and continues to bloom over a long period. *E. Molyneux.*

NOTES FROM AMERICA.

AN ENGLISH GARDENER'S IMPRESSION.

I was interested in the note and illustration of *Enkianthus campanulatus* in the issue for May 15. Until the present season I had never seen it nor read of it, and to me it seems somewhat ironical that I should find it flowering in a garden here. Shrubs and trees are the chief subjects in New Jersey gardens.

I have yet to see herbaceous borders and Rose beds as I know them at home, although I do not doubt their existence on some of the larger estates.

Owners of suburban houses here devote most of their ground to grass, on which are dotted various trees and shrubs.

Severe winter weather and scorching heat in summer are, I am informed, strong factors operating against successful gardening in these parts.

The specimens of *Enkianthus* I have seen are quite small. They had become so big that the owner pruned them a year or two ago; but for all that they are charming. They have been in flower some ten days. As to their hardiness it goes without saying, for the winters here touch zero and below, I am told. I saw the last of winter disappearing when I arrived on March 23; the snow was 2 ft. to 4 ft. deep, forming a solid mass that took a week or more to melt, both here and in New York.

One of your correspondents is, I notice, worried by *Equisetum* (Horsetail). Here it grows on the banks adjoining the railroad, and reaches out along the swamps and by the streams and rivers—acres of it.

Speaking of swamps, I pass miles of them daily, and here the mosquitos breed. They are of the small type, but I am told that a bigger species comes later. *T. A. Weston, New Jersey, U.S.A.*

TREES AND SHRUBS.

CRATÆGUS ORIENTALIS SANGUINEA.

THE photograph reproduced in Fig. 1 shows a fine tree of *Cratægus orientalis sanguinea* flowering in Aldenham House Gardens, Elstree, at the present time. This beautiful Thorn stands out markedly amongst the large number of trees of this genus now in flower in these gardens, and one can form a better opinion of how conspicuous it is when it is considered that the number of species and varieties, based principally upon American botanical determination, grown at Aldenham, approximates somewhere in the region of one thousand. The various species of *Cratægus* provide a most valuable group of trees for pleasure ground and woodland decoration, and their three seasons of flower, fruit and autumn foliage render them exceedingly useful. The tree of *C. orientalis sanguinea*, as will be seen from the illustration, literally smothered with blossom this year, and practically all the other varieties are finding the climatic conditions of this country admirably suited for flowering. Known prior to 1852,

a circumference of 4 ft. 11 in. at 3 ft. from the ground, and is scarcely, if any, less at a height of 8 ft., whence the numerous branches arise that form the head. In the south the tree usually flowers in May, but this year it was in full beauty on April 24, or a little earlier, for, although in a northern aspect, it is in proximity with other large trees. Almost every twig was furnished with a corymb of blossom, which had a strong fragrance like that of the Hawthorn. The tree is variously known as the Bastard Service Tree, Bastard Mountain Ash and Lord Fife's Ash. The last was the name by which it was known in Kincardineshire some years ago, and a local nurseryman applied it to this tree. The parentage is generally believed to be *P. intermedia* × *P. Aucuparia*, and some are of opinion that the hybrid occurs spontaneously where the parents happen to grow in proximity. It was originally discovered by Mr. J. T. Mackay in the Isle of Arran, Firth of Clyde. *J. P.*

PYRUS (MALUS) THEIFERA.

Pyrus (*Malus*) *Theifera*, one of Wilson's discoveries in western China, with its long spread-



FIG. 1.—CRATÆGUS ORIENTALIS SANGUINEA IN THE HON. VICARY GIBBS'S GARDEN.

which date it was described in the *Botanical Register*, the variety is closely allied to the type, differing chiefly in its greater neatness of habit and the darker colour of its fruit, which are dark purplish red. The leaves are broader, and very effective.

It is a neat, attractive Thorn, pendulous in habit, not of rapid growth, and fully worthy of inclusion in the average garden as a specimen tree on the lawn or other grassy position, and on account of this is, with its type, often planted in public parks. Of the other Thorns the most beautiful at the time of writing are *C. lamuginosa*, *C. matura*, *C. Arnoldiana*, *C. globosa*, *C. macracantha* (with its wonderful spines, and, later on, its fine fruit) and *C. mollis*. As stated above all are doing well this year, and amongst the best ornamental trees this country has ever received. *Edwin Beckett, June 18.*

PYRUS PINNATIFIDA.

THERE is a fine tree of this natural hybrid at Orleans House, Twickenham, Middlesex, which must be amongst the largest of its kind in the country. It is 50-55 feet high, with a spread of branches not much under 50 ft. The trunk has

ing and irregularly ascending branches, has such an unusual and picturesque habit for a Crab-apple that it is easy to recognise at any season of the year. When covered with its innumerable clusters of rose-red buds and pale rose-coloured or nearly white flowers it is one of the handsomest of the Asiatic Crabapples. Judging by the behaviour of several plants in the Arnold Arboretum, U.S.A., it flowers only in alternate years. Last spring the largest specimen in the Peters' Hill group flowered well.

DAVIDIA INVOLUCRATA.

A TREE of *Davidia involucrata*, some 30 feet high and with a spread of about 25 feet, flowered freely this spring in the Earl of Plymouth's gardens at St. Fagans, Glamorganshire. The inflorescences were spoiled by the cold nights and frequent rains. The general appearance of the tree is that of a large-leaved Lime, and it is as ornamental as a *Tilia*, but the gardener, Mr. Hugh Pettigrew, considers that it is over-rated as an ornamental flowering subject. The tree has set seeds freely each season during the past few years, and is seeding again this season. *T.*

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNOLME, Warter Priory, Yorkshire.

Rock Garden.—The removal of disfigured foliage, seed pods and faded flowers must be diligently pursued to keep the rock garden tidy. Aubrietia and Arabis may be reduced with a knife and some varieties of Thyme will need attention in this respect. Each plant or colony should be prevented from intruding on its neighbour, and no species allowed to cover the rocks entirely. Keep streamlets scrupulously clean and judiciously curtail such plants as *Mimulus* and water Forget-me-not, which are likely to obstruct the flow. Bare spaces may be furnished, for the time being, with fine-leaved scented Pelargoniums and small, grey-leaved foliage plants. *Dianthus Heddewigii* and *D. chinensis* are also useful for this purpose. *Daphnes* will derive benefit from a top-dressing of leaf-mould, and light shade from the mid-day sun. *Daphne Cneorum* is worthy of extended cultivation; this Garland Flower resents stiff soils. The appearance of creeping Junipers may be improved by regulating and pegging down wayward growths. Where additional bulbous or tuberous-rooted subjects are required, such as *Erythronium*, *Cyclamen* and *Fritillaria*, the order for them should be placed at an early date to obviate delay in planting during early autumn. Watering is necessary in sunny positions, and should be done towards the close of day. *Hemerocallis*, *Ajuga*, *Helianthemum*, *Veronica*, *Dianthus*, *Viola gracilis* and *Crane's-bill* are plants which prolong the charm of rock-gardens.

Heliotrope.—Where *Heliotrope* is grown for autumn flowering, the young plants, whether raised from seeds or cuttings, should be placed close to the roof-glass in low pits or frames. Pot them on as they require it. If large specimens are needed the plants should be stopped on frequent occasions to obtain a well-furnished head of bushy habit. When the plants have filled their pots with roots, they should be given frequent applications of diluted liquid manure and soot water, with a quick-acting fertiliser for a change. Good guano, if it can be obtained, is safe to use, and one of the best manures for general purposes. The so-called Giant *Heliotropes* include many fine forms, and seedlings provide a variety of colour. Where large inflorescences are required, the young seedlings should only be stopped once; this will result in three or four strong shoots developing. Such plants, well grown in five-inch or six-inch pots, are very attractive and useful for decorative work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Strawberry Propagation.—Runners afford the best and most general method of propagation. Where young Strawberry plants have been grown to produce runners for new plantations, propagation should be commenced. The best method of layering is to peg the runners into small pots filled with loamy soil. Runners are entirely supported by the parent plant until they form roots of their own, but the soil in the pots should be kept moist to ensure the rapid formation of roots. Select the strongest runners and fix each one securely in the centre of the pot by means of a peg. Pegs made from dried Bracken Fern are suitable for the purpose.

Figs.—Fig trees growing against walls in the open need attention in thinning and training of the young growths. The strongest shoots should be stopped during the summer, leaving only those required for fruiting next season. Where Figs are growing in poor soil in re-

stricted borders, and have been root pruned occasionally, very little removal of the growths will be required beyond keeping the branches thinned. A free use of the knife frequently results in the development of soft, unproductive wood, and especially in the case of young trees or those growing in rich soil. New shoots should be encouraged to develop from near the stem to furnish bare spaces. Suckers often grow up from the bottom in large quantities, and these are sometimes trained in to fill bare places; but the practice is not to be recommended, as better wood may be obtained from healthy branches. When Figs are cropping freely, the roots need large quantities of water during the summer, and especially if they are planted at the foot of south walls in light soil. Figs that are not too luxuriant in growth will be benefited by light applications of a concentrated fertiliser, and the border may be lightly mulched with short manure. Attention must be given to watering in hot, dry weather.

Hardy Vines.—Vines growing in the open require attention with regard to regulating new growth, and pinching the laterals as previously advised. Where extension of the Vine is required the young growths may be allowed to grow unchecked until they have attained the desired height. Thin out the bunches after it is seen which are well set with fruit, and allow only one bunch to remain on each lateral. Where thinning of the berries can be undertaken, much better Grapes will be obtained. Examine the border, and if found to be dry give it a copious watering. An application of a suitable fertiliser will assist the Vines considerably at this stage to swell their fruit. Syringe the foliage with clean, soft water late in the afternoon; this will tend to keep red spider in check.

General Remarks.—Protect all fruits approaching ripeness from injury by birds. Use the hoe freely among bush fruits to keep the ground free from weeds.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Peaches.—Trees in the earliest house will now be cleared of fruit, and the house must be fully ventilated night and day. It is a matter of the first importance that the trees should be regularly syringed to keep the foliage clean, as on the proper ripening of the wood and the plumping up of the buds next season's crop will depend. Old trees should receive frequent supplies of liquid manure, and on no account should the soil about the roots be allowed to dry, or bud dropping in spring will follow. Houses in which the fruit is ripe or approaching that stage must be ventilated night and day to secure fruits of the finest flavour. Examine the fruits daily, when they are cool, and gather all that are ready.

Successional Peaches.—Trees on which heavy crops of fruit are swelling should receive liquid manure at the roots. Keep the foliage clean by regular syringing, and close the house early in the afternoon if it is necessary to forward the crop. The night temperature may be 70°, with ventilation, and this can be maintained without the aid of fire-heat. Pinch back gross shoots and lateral growths, and keep the shoots tied down to the trellis. Push the foliage aside as the fruits begin to change colour, to allow full exposure to light.

Late Peach Houses.—Finally thin the fruits on late trees. If disbudding has not been efficiently performed a final thinning should be made now, as overcrowding is the greatest mistake that can be made, especially with late varieties of Peaches. Now is the time to retard the crop, if this is desirable, by opening the ventilators freely; this is preferable to shading the house at a later date. Labour in watering may be economised by mulching the border with half-rotten manure, or less stimulating material, whichever is best suited to the requirements of the trees.

THE ORCHID HOUSES.

By T. W. BAISCOE, Gardener to W. R. LYSAGT, Esq., Castleford, Chepstow.

Oncidium.—This large and varied genus includes many Orchids of considerable horticultural merit; certain species require warm house or stove treatment, others an intermediate temperature, whilst a few thrive in the cool division. Those of the first category are characterised by large, fleshy leaves, and the absence of pseudo-bulbs. They are usually natives of hot, damp, shady places. They include *O. Lanceanum*, *O. bicallosum*, *O. carthaginense*, *O. Cavendishianum*, *O. haematochilum*, *O. luridum*, *O. tetrapetalum*, and *O. pulchellum*. These plants all require careful watering, and should not be dried off during their period of inactivity. They should be grown in a shady corner of the warm house. Small pieces of charcoal should be incorporated with the compost in which they are grown. Others that should be grown in the warm house are: *O. ampliatum*, *O. Jonesianum*, *O. Kramerianum* and *O. Papilio*. Some of the best garden *Oncidiums* require the conditions prevailing in the Cattleya or intermediate house, such as *O. altissimum*, *O. crispum*, *O. curtum*, *O. flexuosum*, *O. Gardneri*, *O. Mantinii*, *O. Forbesii*, *O. sarcodes*, and *O. phymatochilum*. The cool-growing kinds are: *O. olivaceum*, *O. dasystyle*, *O. cheiroporum*, *O. macranthum*, *O. concolor*, *O. superbiens*, *O. serratum*, and *O. zebrinum*. Such species as *O. macranthum* produce long-branched scapes, and these should be either trained along the roof rafters or around two or three neat stakes. The small growing *Oncidiums* should be grown in pans without side holes, and have a wire handle fixed whereby they may be suspended from the roof rafters of their respective division. The majority, however, will succeed in ordinary flower pots, while a few, of which *O. crispum* may be cited as an example, should be grown in pans. The pseudo-bulbs are produced at short intervals on a creeping rhizome; therefore, with a large soil surface the roots may be easily restricted to the compost. *O. flexuosum* possesses a rhizome which has a tendency to grow upwards, hence a raft will be found most convenient for this plant, the base of which may be fixed firmly in a pot or pan. Whatever receptacles are chosen, they should be filled one-third of their depth with drainage material. The compost should consist of Osmunda-fibre three parts and Sphagnum-moss one part, with a generous sprinkling of crushed crocks and coarse sand added. Where the plants are not growing satisfactorily, a small quantity of partly decayed Oak or Beech leaves should be incorporated with the mixture. Several Orchids that may be in an unhealthy state improve if planted in the leaf-soil mixture, but few respond more readily than *Oncidiums*. During the growing period the roots should be well supplied with water, but after the pseudo-bulbs are fully developed a less quantity will suffice. The rooting-medium should always be in a sweet condition, for once it becomes sour *Oncidiums* soon deteriorate, and, moreover, it takes a long time for them to regain their former vigour. A fresh, buoyant atmosphere is also essential, and during dry, hot weather the plants are benefited by an occasional light spraying overhead. Thrips sometimes attack the young growths; the plants should be examined at intervals, and directly the pest is detected the house should be vapourised forthwith.

PLANTS UNDER GLASS.

By JOHN COATES, Foreman, Royal Botanic Gardens, Kew.

Primula sinensis.—Seedlings raised from a sowing made late last year are now ready for shifting into their flowering pots, which should be of six-inch or seven-inch size, according to the strength of the plants. Some old mortar rubble should be added to the potting compost, failing this, a sprinkling of lime should be given, as these *Primulas* are lime lovers. Grown in this way fine specimens should be obtained by autumn.

From a decorative point of view the stellata forms are best suited for this method of cultivation. Young plants raised from seed this season should be potted on as they require it; the same remarks applying to *P. kewensis*, *P. verticillata* and *P. malacoides*. Seeds of *P. malacoides* may be sown at any time during July, in fact plants of this *Primula* raised from later sowings will stand the winter conditions in the neighbourhood of London better than those from earlier sowings.

Bertolonia and Sonerila.—Certain members of these genera are very charming used for table decoration in the same way as *Fittonias*. But they are much more difficult to manage, requiring a close, humid atmosphere, in fact some of them are only seen at their best when grown under a large bell-glass or case. They are readily propagated by means of cuttings or seeds.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Seakale.—To obtain strong crowns of Seakale for early forcing give the plants every attention. Hoeing should be deep and frequent and the plants watered when necessary. Where there are a number of growths on a single plant, they should be reduced to one, removing for preference any that show signs of flowering.

Turnips.—A sowing of Red or Green Top Turnips should be made at this time. As the Turnip fly is usually troublesome to this crop in the seedling stage, encourage the plants to make rapid growth by watering them with a weak solution of nitrate of soda.

Mulching.—Mulching is of great benefit to most crops during dry weather and is a means of maintaining uniformity of heat and moisture in the soil. Almost any light litter such as decayed manure, leaves, or lawn-mowings, is suitable for the purpose. A dressing one inch deep is sufficient to apply at one time, and it should be placed in position immediately after the soil has received a thorough watering.

Potato Disease.—The common Potato blight (*Phytophthora infestans*) usually makes its appearance towards the end of June or early in July, and spraying as a preventive should take place before the disease actually appears. Those who prefer their own spraying fluid will find the Bordeaux mixture gives satisfactory results. The following materials are required to make 40 gallons of spray fluid, viz., 4 lb. of sulphate of copper and 4 lb. of freshly-burnt quicklime. In a wooden barrel capable of holding 40 gallons dissolve the copper sulphate in 35 gallons of water. In a separate vessel slowly slake the lime, stirring in sufficient water to bring it to the consistency of cream. When the former is dissolved, add the lime solution in sufficient quantity to neutralise the acid. The amount can be ascertained by testing the mixture with red litmus paper, which will turn slightly blue when the right proportion of lime has been stirred in. The mixture must be applied in the form of a fine spray to be effective, and both the upper and under sides of the foliage should be wetted. A later spraying should be given so that subsequent growth may also be treated. In districts where the disease is prevalent, considerable increase in weight of crop is obtained if spraying is done in a thorough manner.

Spinach.—A sowing of prickly-seeded Spinach should be made at this time in rich ground that is well drained.

Late Peas.—It is scarcely worth while to sow late varieties of Peas after the end of June. As mildew is a common source of trouble towards the end of the season, special treatment is advisable as a preventive measure. Trenches two feet wide should be made and a good dressing of manure added. When replacing the soil, make it firm by treading as the work proceeds. Sow thinly, as the plants must have plenty of room in which to develop healthy foliage. Gladstone Autocrat and Latest of All are varieties suitable for this sowing.

THE MANURING OF DWARF APPLE AND PEAR TREES

THE surface roots of Apple and Pear trees are mainly concerned in fruit production, and the deeper ones are responsible for the development of coarser, woody growth. The grower can, in a normally dry summer, feed for the purpose of developing the fruit and the fruit buds without encouraging undue luxuriance of woody growth. The first principle in the manuring of Apples and Pears is the recognition of their individuality, for as they differ much in habit and constitution, and the stocks on which they are worked sometimes, unfortunately, accentuate rather than lessen these differences, it is idle to think that one general application of manure will do for all. Where trees are grown in a plantation this can only be done

Though it is desirable to mulch young trees in the summer to keep their roots near the surface, only long strawy material should be used, or even weeds, lawn cuttings, etc. In the case of young trees, it is often necessary to encourage the formation of fruit buds, and phosphate is the plant food which trees most need in their production. The best manures to apply are, on heavy soils, basic slag in the autumn or early winter, and, where the soil is a light sandy or gravelly one, superphosphate in the early spring, one to two pounds to a tree, according to its size. In poor, sandy soils, the foliage will often be of a pale colour, or thin in texture, and in such cases kainit should be applied in the autumn or winter at the same rate, or sulphate of potash in the early spring at half that rate. Where, however, the thin and dry character of the soil, and the consequent poor growth of the trees, render neces-



FIG. 2.—THE FOUNTAIN COURT AT THE DUFFRYN (see p. 17).

to a modified extent. In practice it will generally happen that some trees next to each other will need special feeding at the same time, and then it is easy to apply the main portion of the dressing to the space between two trees rather than on the other side of them. One of the most common errors of practice in this matter is the giving of too much manure to young trees and too little to old ones. In ordinary garden soil, and even meadow or arable land, there is rarely any need to feed young trees of Apples and Pears until they are bearing good crops. The best guide is the growth of the young shoots, and when the strongest of these extends much more than a foot in one season we may take it that no special manure rich in nitrogen is necessary

sary heavy mulches of stable or farmyard manure, this will, as a rule, make good the deficiency of potash. With older trees the differences become more and more marked, and the treatment of them must be adapted more and more to their individual needs. When growth is feeble, a mulch of well-rotted manure should be given at the end of May each year, this being preceded in April by a sprinkling of nitrate of soda at the rate of two to four ounces to the tree. Moderately strong trees may be given similar treatment when they are showing promise of a very heavy crop of fruit, and the application of the nitrate of soda may be repeated about midsummer, or guano may be applied three or four feet from the stem, and afterwards washed into the soil. A. Petts.

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THE TIMBER OF WESTMINSTER HALL.

CAREFULLY preserved in a safe in St. Michan's Church, Dublin, is a book, entitled *Memorials of St. Michan's*. This title is printed in gold leaf on the back. From this old book, at page 174, the following extract has been taken:—

"Stanilurst findeth that Anno. 1095, there came certaine Esterlings to the North side of Dublin adjoyning to the Liffie, and seated themselves there, so that of them to this day, the



FIG. 3.—PORTION OF WORM-EATEN OAK TIMBER FROM THE ROOF OF WESTMINSTER HALL.

place is called Ostomontowne, and corruptly, Oxmorton, and the Parish, Saint Michan's, of one Michanus, a Dane and a bishop which founded the Church, unto whom Murchard or Moragh, King of Leynster, gave that parcel of land to that use. The faire greene, or Commune, now called Ostomontowne-greene, was all wood, and hee that diggeth at this day to any depth shall finde the ground full of great rootes. From thence Anno. 1098, King William Rufus, by licence of Murchard, had that frame which made up the rooffe of Westminster Hall, where no English Spider webbeth or breedeth to this day."

In *The History of Ireland*, by Geoffrey Keating (edition with translation from the Irish by Rev. Patrick S. Dinneen), Vol. 3, p. 295, is the following:—"It was in the reign of this Toirrdhealbhaich (Turlough) that William Rufus, King of England, by the permission of Toirrdhealbhaich OBriain, King of Ireland, sent to Ireland for timber with which to roof Westminster Hall in the year of the Lord, 1098." The preface of Keating's *History* was dated 1629.

The following is an extract from the *Journal of Thomas Dineley . . . his visit to Ireland in the reign of Charles II.*, p. 178:—"This is

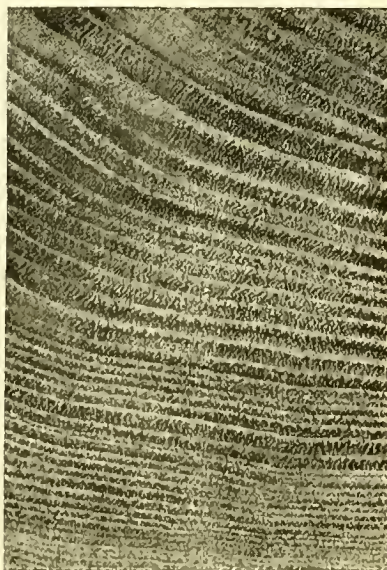


FIG. 4.—SECTION OF CHESTNUT TIMBER.

observable that though the Irish timber in England, on the roof of Westminster Hall, etc., will not admit of any verminous creature or cobwebbs, yett the timber and houses in ye country of Ireland abound with cobwebbs, spiders, woodlice, and rather more than England, which may in some measure be imputed to their nastynes. Spiders there are without poyson."

A similar entry is to be found in the *Historie of Ireland*, collected by Meredith Hamner, Edmund Campion, and Edmund Spenser, Dublin, 1633, p. 97; as also in *Hamner's Chronicle*, in the College Library (T.C.D.), where is an account of the St. Michan's Oak having been sent for the building of Westminster Hall.

The late Mr. Gladstone was greatly interested in these extracts, and Sir A. Vicars, at the annual meeting of the Royal Archaeological Institute of Great Britain and Ireland, in 1888, said with reference to the timber: "This was probably the roof pulled down in 1397." Though considerable difference of opinion exists as to the source from which the timber was obtained, yet the above would appear to leave little doubt that the original roof of Westminster Hall, one of the glories of timber architecture, was constructed of Irish Oak. That such would be the case is, however, surprising when we consider the excellent Oak timber that at that early date existed in several places around London, notably in Kent, Surrey and Sussex. Certainly at an early date the far-famed Shillelagh Oaks in Wicklow, some of which girthed 18 feet at a yard up and rose to a height of 70 feet, were considered second to none in the United Kingdom for the quantity and quality of timber

produced, and it would have been quite an easy matter to ship the logs from Dublin to the Thames. So renowned were the Irish forests that timber was exported to both France and Spain, and in the former country Oak from Ireland was used in Jean Goudron's construction of the Louvre.

In 1290 Queen Eleanor, wife of Edward I., set up large timber works at Glencree, in Ireland, to supply timber for her castle, at Haverford, in Wales, and spent considerable sums of money on them. Thus, in May and July, 1290, £100 in silver was spent on the carpenters at these works and on the carriage of the timber (ib., Vol. III., ss. 149, 251, 361, 1148).

In August, 1608, Philip Cottingham, of London, was sent over to Ireland to report on timber for the Navy. In Munster he found much timber, and in the following January was ordered to send 56 tons up the Thames as a specimen (ib., p. 225).

We also know that Wicklow Oak was actually brought to London for use in a West-End mansion, and English brown Oak was used in panelling the dining-hall in the White House, at Washington, so it is quite as likely that for the roof of Westminster Hall, Irish Oak would be requisitioned, especially as it had a wide reputation for colour and graining, and was of exceptional dimensions. I hold no brief for Irish Oak, but the above would seem to point out that its claims to use in Westminster Hall are at least as well substantiated as any others that have been brought forward. The spider fable can readily be dismissed from the fact that this insect rarely suspends its web in places where



FIG. 5.—SECTION OF OAK TIMBER.

little or no prey can be taken, especially in a semi dark ceiling at 90 feet from the ground, and Westminster Hall is not alone in having this Monkish tale fathered upon it, as it is attached to the fine Oak-timbered roofs of the Cloisters of Durham Cathedral.

Here it may be well to state that the roof of Westminster Hall has had rather a chequered career, it being built in 1097; repaired by William Beckett, Chancellor of England, in 1163; destroyed in 1299 (Edward I.); and repaired 1397 (Richard II.), the repairs lasting for two

years. At several later dates the roof was also repaired, particularly in 1820, when it is said to have been patched with old ship timber. To those who are interested in the history of the hall much information will be found in *Stow's Survey* (Vol. 2, Book VI., p. 47, etc.). The orders given by Richard III. to Thomas Terrel, Keeper of the Park of Weldegolet, within Essex, regarding the preservation of timber for Westminster, is certainly suggestive.

In a discourse on "Home Timber Resources and Afforestation" Major Courthope mentioned that the roof of Westminster Hall was constructed very largely of Sussex timber in the reign of Richard II. and it has stood the test of time, and that the Office of Works, in their search for the best timber to carry out repairs to the roof, had chosen Oak timber from his Whilgh estate.

Generally speaking, the timbered roof, though some of the logs are as sound as when placed in position, was in an unsafe condition, insect attacks, with their usual accompaniments, having riddled some of the beams in a most thorough and fantastic manner (see Fig. 3). Though varying in appearance much of the timber is of a rich, dark-brown colour, in other cases cinnamon-brown, some of the beams being 20 feet long and 3 feet by 2½ feet thick.

For long it has been a disputed point whether the timber of the roof of Westminster Hall is Oak or Chestnut. Originally the wood was described as Irish Oak, but about the end of the thirteenth century, when extensive structural alterations and repairs were undertaken, it was stated to be of Spanish Chestnut. This caused great confusion and a considerable amount of controversial correspondence, some writers describing the roof as of Oak, while others affirmed that it was Chestnut. That a quantity of Chestnut timber was used in connection with certain of the buildings at Westminster is well known, and this, no doubt, has given rise to the erroneous statement that the roof of the famous hall is also of that wood. In order, if possible, to settle this vexed question, a thorough examination of the roof was made during the repairs at present being carried out, with the result that all the timber was found to be of Oak. Not only was the timber of the roof examined *in situ*, but portions of the decayed wood, which it was found necessary to remove during repairs, were subjected to a careful scrutiny and comparison with other timber of a similar kind and of Spanish Chestnut, thus leaving no doubt as to which particular wood the roof was constructed of.

To those who are unacquainted with timber it may be stated that Oak and Chestnut may be readily distinguished by the peculiarities of their medullary rays, which are lines radiating from the centre to the circumference and presenting a star-like appearance. To the carpenter these lines are known as "felt" or "silver grain." In Oak there are two sizes of medullary rays, a few being broad, and many very narrow, all, however, distinctly visible. Chestnut, on the contrary, is readily distinguished by having no broad rays, while the narrow can only be detected by means of a magnifying glass. In the accompanying illustrations—(Fig. 5) Oak from the roof of Westminster Hall, (Fig. 3) Oak from the same place attacked by insects, and (Fig. 4) old Spanish Chestnut from Greenwich Park—the peculiarities of graining in the different woods are readily detected and will leave no doubt that the roof of the hall was constructed of prime British Oak. Fig. 5 of the Oak, shows distinctly the medullary rays in that timber, while in the Chestnut (Fig. 4) not a trace of these can be detected.

The roof of Westminster Hall is acknowledged to be the most perfect wooden structure in the world. It is truly a marvel of Oak timber and engineering construction, and may well be described as one of the finest feats of carpentry extant. The authorities are to be congratulated in having given the necessary labour and money for the repairing of this national treasure, and during the most strenuous periods of the war the work went on uninterruptedly, if slowly, dealing with an enemy that works its nefarious purpose as surely as the most potent agent of warfare. A. D. Webster.

THE DUFFRYN.

THE Duffryn, the beautiful Welsh residence of Miss Cory and her brother, Mr. Reginald Cory, takes its name from the Welsh word for a vale, and is situated about two miles from the village of St. Nicholas, Glamorganshire. The place is some eight miles from Cardiff, and the visitor from that city can either journey by motor car or take the train to Wenvoe, from which it is situated about two miles, on the Barry Railway. It may also be reached by journeying to Peters-ton, on the Great Western Railway, but this involves an additional walk of about a mile.

The estate is in a very beautiful wooded country, and embraces some 3,000 acres, including the villages of St. Nicholas and Duffryn, several farms, a small park, and the grounds and gardens attached to the residence. A small stream, known as the Waycock, flows through the estate, and the natural vegetation, which includes

garden staff to food production. The beds and flower borders were utilised for the raising of seedling vegetables, of which many hundred thousands were distributed free to cottage gardeners and allotment holders in a dozen parishes in and around the estate.

It may appear strange that in a district where coal mines abound fuel was unobtainable for the heating of the glass-houses, yet such was the case, with the result that many choice indoor plants perished from cold. However, new stocks of many of the things which were lost have been obtained, and although even now the task is not an easy one, the renovation and restocking of the glass-houses has been commenced.

The indoor plants include a collection of Hippeastrums (*Amaryllis*) of very choice varieties, another of scented-leaved Pelargoniums, and numerous Cacti and other succulents, the majority of which were in the possession of the late Mr. Henry Cannell, who made these plants his special hobby. Unfortunately, several of the



FIG. 6.—THE DUFFRYN, GLAMORGANSHIRE: SHOWING THE GARDEN FRONT.

a variety of beautiful Ferns, is diversified and interesting.

The ornamental grounds have an area of 46 acres, including some two acres of fruit and kitchen garden. The latter contains several glass-houses, of which a range with nine divisions is the most important. Three of the sections in this house are devoted to the growing of Grapes, and all the vines are carrying good crops.

Like most large establishments in this country, Duffryn suffered much during the war, and it is not to be expected that the place has its pre-war trim condition, for in such a busy centre of industry local labour is most difficult to obtain and imported labour difficult to house. Those who know Mr. Cory will not be surprised to learn that during the war he placed the patriotic object of raising food crops above his own absorbing interest in rare and choice plants and the cultivation of his favourite Dahlias, devoting the whole time and labour of himself and his

more tender succulents were lost during the severe winter of 1917.

The more interesting survivors are:—Agave Victoria Reginae, *A. filifera*, *A. americana* var. *variegata*, *A. americana picta*; *Aloe ferox*, *A. vera*, *A. caesia*, *A. arborescens*; *Beschomeria yuccoides*—a beautiful *Dracaena*-like plant with attractive, glaucous foliage; *Ceropegia Woodii*, which has been in flower since November; *Beaucarnea recurvata* (syn. *Pincenectitia tuberculata*), a curious plant with large, swollen, woody root stock; *Bowiea volubilis* in fruit—an interesting Liliaceous plant which rarely produces leaves, the functions of the foliage being performed by long, twining green inflorescences; *Stapelia primulinus*, which produces flowers of a foetid odour; *Sansevieria guineensis*; *Furcraea jengavea*; *Bryophyllum crenatum*; *Sempervivum arachnoideum*; the Cobweb House Leek; and *Mesembryanthemum tigrinum*. Some of the best *Phyllocactus* in bloom were *P. Francis Couranti*.

with lovely pink blossoms; *P. M. Molin*, scarlet; *P. Johannes Nicholas*, large, white flowers and sweetly scented; and *P. Ackermannii*.

A few plants of *Calanthes* and *Cattleyas* remain of the pre-war collection of Orchids, and the specimens of such choice indoor plants as *Monstera deliciosa*, *Knightsia excelsa*, the red stemmed *Eucalyptus ficifolius*, *Abutilon Triumphans*, *Plumbago capensis*, *Begonias*, *Dracaenas*, *Bamboos* in variety, *Palms* and *Ferns*, remain to show that at one time the Duffryn plant-houses were well stocked with interesting subjects. A very beautiful hybrid *Cordylina* has been zealously preserved, and there is now an extensive stock of this plant, which makes an excellent bedding subject, to which purposes it is put in the flower beds facing the residence. It was raised from *Cordylina Banksii erythrorachis* crossed with *C. australis*, its distinguishing feature being the colouring down the central part of the long, narrow foliage.

In a large tub near the entrance to one of the plant houses is a plant of *Tricuspidaria hexapetala* (syn. *Crinodendron Hookerianum*), producing a number of its red, campanulate flowers on long peduncles.

Numerous frames are filled with seedlings of Chinese plants under numbers, not yet sufficiently advanced in growth to determine their garden value. There is also a large frame filled with seedling Lilies raised from *L. regale* × *L. candidum*, of which the plants are just coming into bloom. An interesting species of *Rubus*, collected by Mr. Forrest in China, has very decorative fruits of clear orange colour, like yellow Raspberries, and the stems of the plant are whitish-grey.

Another interesting plant is *Androsace Bulleyana* with scarlet flowers in capitate heads, which rise about 8 inches above the spatulate foliage.

The pleasure grounds include a terraced garden with a colonnade formed of tall stone pillars which carry arches furnished with rambler Roses. On either side of a broad, central grass path are borders planted in irregular waves to provide colour and at the back are groups of Dahlias with Sweet Peas between. From the centre of this enclosed garden a fine sub-tropical effect meets the view. A bay formed by a dense screen of tall Laurels gives shelter to imposing specimens of *Trachycarpus excelsus* (syn. *Chamaerops excelsa*) associated with big *Cordylines*, *Yuccas*, *Bamboos* and the giant *Heracleum*.

On a wall near by are many interesting climbers, amongst them *Solanum Crispum*, *Teucrium fruticosum* (of which the terminal racemes are developed on shoot branches, consisting of pale lavender blossoms, the large lip being the most conspicuous feature); *Schizophragma hydrangoides* (with foliage like that of the Lilac and inflorescences resembling those of the *Hydrangea*); *Clematis Lady Neville*; and numerous rambler Roses.

Another enclosure, known as the Narcissus garden, contains many raised beds enclosed by wooden borders. Japanese Acers are a feature of this garden in summer, and the low retaining stone wall is gay with Roses, amongst them the newer *Rosa Moyesii*, which was covered with its numerous dark red, single blossoms.

Passing through the Japanese garden, which includes a collection of pigmy trees, *Wistarias*, stone lanterns, and other Japanese subjects, a quiet retreat known as The Cloisters is reached. This is enclosed by a Yew hedge some 10-12 feet high, pierced with "windows." It includes a fine sward of grass decorated with stone-ornaments, and numerous handsome *Wistarias*, flowering abundantly. The path leads down to another terraced garden known as the Paved Court, containing rectangular beds with Bay trees in tubs at the corners. The beds are planted with *Lilium Henryi* over a ground of *Heliotropes* and *Lantanas*. We noticed some fine, old, dwarf Conifers, in handsome Japanese ware, and another beautiful feature is *Vitis amata* clambering above the stonework of a dripping well.

A dense screen of Portugal Laurel separates the Paved Court (see Fig. 2) from a bathing pool, the margins of which are planted with

glorious Japanese Maples, *Astilbes* in variety, *Wistaria multijuga alba* and *Iris Kaempferi*, the last in tubs. Another small, enclosed garden known as Fountain Court, is laid out in the Italian style, with tall colonnades, from the top of which festoons of *Tropeolum* hang down. The central ornament is a fountain with a basin, and at one end is a little summer house containing a stone figure of Buddha. The walls that enclose this pretty court are furnished with Roses, and numerous Ferns find a happy home in the crevices of the brickwork.

The West gardens are of an entirely different character. They consist of a series of shrubbery borders with winding, flagged paths. Being well sheltered from cold winds, these borders have been utilised for the planting of specially choice subjects, including many new Chinese plants introduced by Wilson, Forrest and Farrer. The following are a few of the many interesting plants we noticed:—*Rodgersia pinnata rosea* and a Chinese form of this species; *R. aesculifolia*, which has large foliage, like that of the Horse-Chestnut and a lax flower spike, suggesting an *Astilbe*, forming a plume two feet long on a stalk five feet high; an Oak from Suvla Bay; *Quercus aegilops*, near a fine plant of *Cornus Kousa*; *Lonicera Heckrottii*, *Muhlenbeckia complexa*, which was doing splendidly; *Olearia insignis* *O. myrsinoides*, *Rhem Alexandrae*, *Rubus Geraldianus*, which has purple blossoms in a long, round spike and spirea-like leaves; *Senecio latifolia*, with grey-felted, ovate leaves and rich yellow flowers with an orange disk; *Jasminum Beesianum*, with small scarlet blossoms not unlike a scarlet flowered *Lycium*; *Eunymus alata*, the foliage of which turns a soft, pale rose colour in autumn; *Eucalyptus filicifolia*, *Fitzroya patagonica*, *Hydrangea Sargentiae*, which does well in shade; *Ilex polycarpa*, 15 ft. high, *Ilex dipyrrena*, *Juglans cathayensis*, *Nyssa multiflora*, which assumes fine tints in autumn; *Lonicera tartarica* var. *lutescens*, the interesting *L. gigantea superba*; *L. Scarlet Trumpet*, extremely good; *L. fuchsoides*, *Osmanthus rotundifolius*, a variety of *ilicifolius*; *Populus lasiocarpa*, *Phormium alpinum*, *P. Powerscourt*, *P. Colensoi*, *Prunus microlepis*, *Picea Albertiana*, *Quercus cuspidata latifolia*, *Q. acuta*, of which the young foliage is a grey-lilac colour in spring; *Rhynchospermum jasminoides variegata*, which did not die in the severe winter of 1917, when the green form was killed; *Salix magnifica*, a Chinese species with foliage 5-6 inches long and a fast grower; *Styrax Wilsonii*, which blooms when very small; *S. japonica*; *Sycopsis sinensis*; *Staphylea holocarpa*, which is very pretty in spring when it develops rose-coloured blooms and the young foliage has a bronzy shade; and *Viburnum Davidii*.

We can only refer briefly to the many other features in these interesting gardens. The Lavender garden, enclosed by a Yew hedge and with tall screens planted with rambler Roses, contains four curved water-pools planted with water-Lilies, and just beyond is the commencement of a large lake, which was in course of construction when the war occurred and is only partly completed.

An observation tower at the corner of the Lavender garden was built for the special purpose of over-looking the lake and a rock and alpine garden. The ground, which will eventually be covered by the lake, is at present utilised for planting Dahlias, which are also grown in the Iris garden and the West garden.

The garden front comprises a lawn terrace with flower beds, some of which are shown in Fig. 6. Beyond this, and down a flight of steps, is a grass lawn known as The Flats, with a Lily tank some 100 yards long, in the form of a cross. This ornamental pool is gay with Water-lilies, the White Arum, and *Iris Kaempferi*.

The gardens of The Duffryn have become familiar to many lovers of horticulture, and all who knew them in the "piping times of peace" will feel a hope that before long, improved conditions of labour will enable Mr. Cory and his capable gardener, Mr. J. T. Smith, to restore them to their former beauty and interest.

VEGETABLE GARDEN.

ASPARAGUS.

THE season of this choice vegetable is now over, for it is not advisable to cut the stems after the third or last week in June, according to the locality. Take the opportunity before the stems develop to weed and tidy the bed, for *Asparagus* objects, more than any other occupant of the kitchen garden, to sharing its quarters with the useless. It is necessary to exercise more than ordinary care in weeding, or the new roots which annually form near the surface, and even the crowns, may be seriously injured. To facilitate the work of cutting and weeding, the method of growing the plants in beds, three feet wide, with an alley between each of about half this width, cannot be improved upon, as the paths admit of no excuse for trampling on the bed itself. It is a common practice to give the plants every assistance during their period of usefulness, but immediately this is past they are apt to be overlooked. They still need attention to enable them to build up strong crowns for next season's crop. In the case of comparatively new beds, the soil of which was well prepared beforehand, there may be noticeable decline in the yield if no further assistance is given, after cutting ceases, for a year or two, but plants in older beds often exhaust the soil of its fertility and have to rely chiefly for support on material which is applied on the surface.

Agricultural salt has not the noticeable effect on growth that certain other dressings have, yet salt is beneficial, although discretion should be exercised in its application at all times, especially on retentive soils.

Salt applied to heavy land causes the surface to form a hard crust in summer, whilst in early spring it renders such ground excessively cold, thus retarding growth. It does most good on light, sandy soils, applied lightly throughout the growing season in showery weather. For the benefit of the new surface roots and to preserve moisture in the soil, wood ash should be freely employed every season, in addition to a moderate dressing of short, well-decayed manure immediately after the cutting season is over. Where provision is made for collecting the liquid from animal sheds, nothing is better to use after it is properly diluted. This stimulant may be applied throughout the growing season, and it can scarcely be given too freely. It is time well spent during periods of dry weather to soak the bed with clear water before applying the liquid stimulant. Failing this, a mixture of one part sulphate of ammonia and three parts superphosphate used at the rate of about 2 oz. per square yard may be applied in showery weather, or watered in about every three weeks, according to the nature of the plants. Kainit appears to be useful applied at the rate of 3 to 4 oz. per square yard.

In addition to these cultural details, that of supporting the growths is no less important. When the shoots are allowed to become bent or broken off by the wind before they have properly matured, the basal buds lose valuable support, in consequence of which they fail to ripen thoroughly, and the growth the following spring is then not so strong as it should be. It is not a difficult matter to prevent this happening if steps are taken early enough. Light Pea sticks carefully placed amongst the plants provide a suitable support, but strong Bamboo canes have the advantage of neatness. The latter should be made very secure in the ground and the stems looped to them by strong twine. Another method is that of driving in 4 ft. stakes over the bed and connecting them with stout, tarred twine. When the "grass" is quite brown it may be cut down, and, after clearing the bed of all weeds, a mulch of manure applied for the winter. On heavy, cold soils, it is not a wise plan to use large quantities of heavy manure, such as that from cow sheds, on *Asparagus* beds; the lighter material from the stable is decidedly preferable. *Yorkshire Gardener*.

FLORISTS' FLOWERS.

CHINESE PRIMULAS.

The value of these plants for winter and spring decoration of the greenhouse and conservatory cannot be too highly estimated, and a good batch should always be grown by those who have the facilities to do so. Not only are they useful for the furnishing of the greenhouse during the short days of winter, they are also admirable for dinner table decorations when grown in pots of four or five inches diameter.

The seed should be sown in well-drained pots or pans about the middle of June, in a finely-sifted compost consisting of loam and leaf-mould in equal parts, lightened by a good dash of silver sand. Prepare the pots and nearly fill them with some of the soil, which should be pressed fairly firmly and watered with a fine-rosed can. Sow the seed on the surface, and cover them with a sprinkling of sand. Place the pots in a moist atmosphere, and cover them with a piece of glass and paper to conserve the moisture and exclude the light. Primula seed should never become dry, as this is fatal to successful germination. With careful treatment the young plants will soon appear, when the glass should be removed and the pots placed on a shelf close to the roof-glass.

As soon as they are large enough to handle, prick the seedlings off into small pots or boxes; the latter are best if labour is scarce. Use similar compost to that for the seed pans with an addition of fine charcoal. The best place in which to grow the seedlings is a pit with a row of pipes to provide slight warmth, which may be necessary during wet weather, as these Primulas are very liable to damp off in an excess of moisture.

As they grow and the pots or boxes become filled with roots, shift the plants into four or five-inch pots, which should be very carefully drained with a piece of rough turf over the crocks to ensure a free passage of water. Prepare a mixture of two parts fibrous loam, hand-picked for preference, one part flaky leaf-mould, one part old hot-bed manure or dry cow manure, with a sprinkling of half-inch charcoal and silver sand. Place the roots well down in the soil in order that the collar of the plant may be just below the surface. Pot firmly, and give a dusting of sand to prevent the plants damping off. There will not be much fear from damping provided the plants are watered carefully at all times; indeed, this is one of the most important details in their culture. They will now grow well in a cold frame, taking care to shade them lightly with tiffany from the direct rays of the sun. Shading, however, should not be overdone, as it causes the plants to grow weakly. As the pots become filled with roots the latter may be fed with weak liquid manure or soot water, and occasionally a dusting of plant food.

If specimen plants are desired, they may be repotted again into six or seven-inch pots, but not any larger, or they will not fill the receptacles with healthy roots before the winter. When there is danger of severe frosts, the plants should be removed to a house having a temperature of about 50°, with a slight warmth in the hot-water pipes to promote a circulation of warm air. An excess of fire-heat must be guarded against, as it would favour the spread of insect pests, and if by any chance these should appear, recourse must be had to fumigation. This should be done twice and, if possible, before the flowers appear, as I have found the fumes discolour the petals of the crimson varieties. Continue feeding the plants lightly until they are in flower, then only use clear water. Keep the temperature of the houses as equable as possible, allowing for a slight lowering at night, but not below 45°.

Primulas should always be kept growing steadily from the seedling to the flowering stage, as a check of any kind is fatal to their well-being. Keep all decayed flowers picked off, and also any foliage that is over-ripe and turning yellow; also keep the plant stages clean. Give each plant room to develop, and the amount

must be determined by the variety, as some have much longer leaf stalks than others. During the two last months of the year, watering should be done in the morning to obviate the presence of moisture at nightfall.

The plants will take no harm in severe weather provided they are kept a little on the dry side. The usual practice, I believe, is to raise Primulas from seed every year. This year, however, I am retaining some of last year's best specimens and am looking forward to the results. They have been potted into eight-inch pots and, so far, look promising. Where room can be had it is better to grow the varieties in separate colours, as they are more effective when each colour is seen in a mass. The finest of all are the "Giant" Primulas. These may be had in several colours, and, with high cultivation, the individual blooms will grow as large as a half-a-crown. They are also strong growers, but require a little more care in cultivation. The ordinary type may be obtained in nearly all shades except yellow, ranging from pure white,

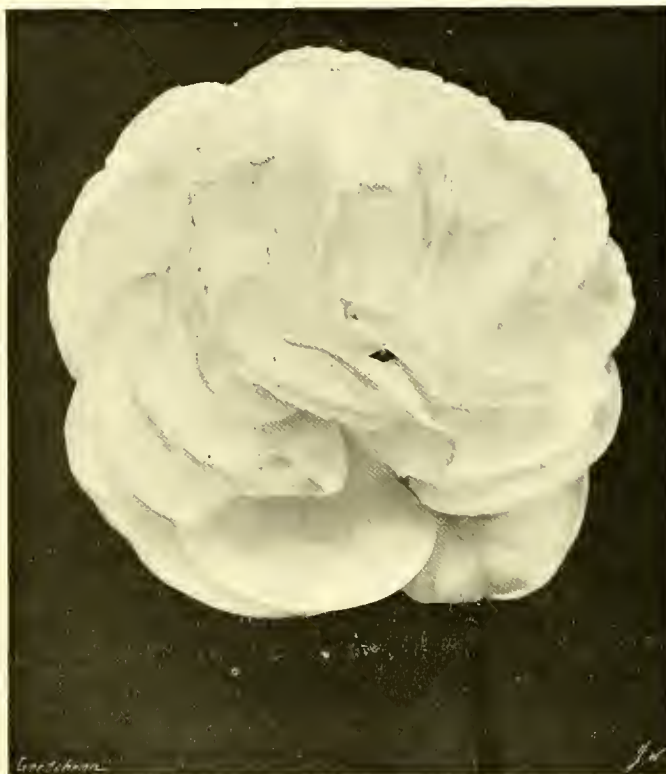


FIG. 7.—CARNATION NEW WHITE CLOVE, R.H.S. AWARD OF MERIT, JUNE 15, 1920.

pink, salmon, dark and light blue, scarlet, red and crimson. The pink, salmon and scarlet colours are very effective under artificial light and show to advantage when employed for table decoration. Carefully turned out of their pots, placed in suitable receptacles and with fresh green moss placed around them, they will remain in good condition for a week, if desired.

The variety known as the "Duchess" is a distinct break from the others, having flowers of white, with a darker zone of colour round the centre. It is not so compact a grower as the others, but, nevertheless, is most effective.

The "Stellata" Primulas are taller growing and much lighter in effect. These plants bloom over a long period, the flowers unfolding in tiers one above the other. These are also most useful where decorations of a light nature are desired. The foliage of all the Chinese Primulas has an agreeable scent, which adds much to their attractiveness. Those who wish for success, with this beautiful greenhouse flower should sow the seed now and treat the plants as advised above. *R. W. Thatcher, Carlton Park Gardens, Market Harboro.*

HOME CORRESPONDENCE.

Plum Laxton's Supreme.—In a season like the present, when the Plum crop in the open is so light, it is an advantage to have trees of Laxton's Supreme carrying huge crops of fruit. A bush-grown tree of this Plum, planted in December, 1914, is now 10 ft. high and bearing so abundantly that as many as a dozen props are required as supports to prevent the branches from being broken by the weight of the fruit. The foliage of this variety is quite immune to insect pests. This Plum is the result of a cross between Denison's Superb and Victoria; in colour it is similar to the former; it has good flavour and ripens just after the Czar. *B. W.*

Rose Frances Gaunt.—I am not surprised to hear that Rose Frances Gaunt won the premier award at the Rose trials at Bagatelle. It is one of the best of the new varieties. The habit of growth is all that could be desired; vigorous, carrying the blossoms erect on stout stems,

which renders it all the more useful for garden decoration. The colour is deep apricot. *E. Molyneux.*

Strawberry Hatfield Victor.—Some enormous fruits of Hatfield Victor Strawberry were shown at the recent meeting of the Royal Horticultural Society by Messrs. Whitelegg and Co., Chislehurst; probably they weighed four ounces each, as claimed by the exhibitor. Plants were not exhibited, and no estimate could be formed of the weight of the crop, but there is no doubt about the extra vigour of this variety, and it will probably succeed in poor soils where other kinds cannot be grown successfully. In such circumstances the fruits may possibly be smaller than those exhibited, and this would, in some circumstances, be an improvement. It is a pity that the good old varieties—British Queen, Dr. Hogg and others—are so seldom seen now, as none of the newer varieties can compare with them for flavour; unfortunately they require a good, deep loam, or a well-cultivated clay soil, in which to grow them successfully, and existing stocks have been weakened during years by inattention to cultural requirements, especially

by failing to obtain strong runners for planting. Few plants pay so well as the Strawberry for extra attention in their young state. Those who still have these good old varieties referred to would do well to obtain the best runners at once, layer them carefully in small pots and pay full attention to watering and feeding while the plants are growing. If the stock is weak, it would pay to grow plants next year without fruiting them, and again secure the strongest runners; such treatment, with the highest cultivation when planted out, will eventually restore vigour to these varieties. Raisers of new kinds in recent years have not succeeded in obtaining good flavour, and they will have to use older kinds for pollination if they wish to secure it. *W. H. Divers, Westdean, Hook, Surbiton.*

Green Fly and Roses.—It would be difficult to imagine a season worse than the present for repeated attacks of aphids on Roses of all types. So severe are the attacks that a few days' neglect cripples the points of growth, causing much damage to the present flower crop and to next season's also. I find McDougall's Katakilla the most effective insecticide for aphids. It is sold in packets, each sufficient for 2½ gallons of water. The powder should be mixed with two quarts of water, by vigorously stirring the whole into a lather; then add the further amount of water necessary, which should always be rain water or softened water. This insecticide should be applied in the evening as soon as made. This preparation does not in any way injure the foliage of the Roses. Neither is it necessary to wash the plants with clear water after the application. *E. M.*

Habranthus pratensis.—I had the Chilean Fire Lily (*Habranthus pratensis*) finely in flower in my garden during the early part of June, and enclose herewith a few blooms of this attractive plant. *Habranthus pratensis* has grown well with me in East Lothian for the past ten years and is quite hardy. It is certainly one of the most brilliant flowering plants we have in early June. *G. Taylor, Edinburgh.*

Selection of Seed Potatoes.—Where it is the practice to save seed tubers of Potatoes for future planting, any rogues observed in the row should be marked with a stick. The tubers of the rogues should be dug before the general crop is lifted, so that the future stock may be true to variety. For early forcing, suitable tubers should be selected before they are ripe from the earliest varieties grown, and allowed to become green by exposure to sunshine, after which they may be set up in boxes and stored in a cool, airy shed. This treatment will ensure good sets for planting in pits or pots in November. *H. Wheeler, Wenvoe Gardens.*

Big Bud in Black Currants.—This pest is much in evidence in this neighbourhood, and a similar pest also infests Hazels in the woods and coppices around. A week ago, while in a neighbour's garden, I found a standard Black Currant which has not been known to be affected with big-bud; the tree has been budded or grafted on another stock, but what the stock is I could not determine. Large growers of Black Currants will have more experience than I, but what was, I believe, found to be the way to get rid of Phylloxera in Vines may be the way to get rid of big-bud in Black Currants. *J. E., East Grinstead.*

Potato Spraying.—Having read with some anxiety the criticisms directed against spraying as a preventive of Potato disease (*Phytophthora infestans*), I offer my humble testimony to the efficacy of spraying with Bordeaux Mixture (made with lime and copper sulphate) more than 15 years ago. At that time spraying was considered foolish, and an addition to garden work. I experimented on an early variety, Dickson's Short-top Ashleaf Kidney, which had been planted late; half the crop was sprayed, and half left unsprayed; the crop from the sprayed portion gave 20 per cent. greater weight of tubers than the unsprayed. In my opinion we shall be losing much valuable food if spraying is discontinued. Last season late blight disease was not much in evidence amongst Potatoes, and perhaps this immunity may be accounted for by the persistence with which spraying was carried out during the years of war. *E. J.*

SOCIETIES.

WINDSOR, ETON AND DISTRICT ROSE.

JUNE 26.—The twenty-sixth annual show of this Society, which enjoys the active support of the King, was held in the Slopes of Windsor Castle.

The King's Challenge Cup, which is open to all England, always attracts excellent Roses, and this year there was no exception to the rule. The class requires 48 blooms of distinct varieties, and the first prize was won by Messrs. D. PRIOR AND SONS with a splendid collection of good, fresh blooms. All types of exhibition Roses were represented, and the colour arrangement of the blooms was particularly good. Excellent flowers in this exhibit were Mrs. Ambrose Ricardo, George Dickson, Mrs. W. J. Grant, Mrs. J. Laing, H. V. Machin, Hoosier Beauty, Maman Cochet, E. Godfrey Brown and White Maman Cochet. Messrs. B. R. CANT AND SONS won second prize, and included fine blooms of Mrs. J. H. Welch, Lyon Rose, Mrs. Elisha J. Hicks, H. P. Pinkerton, Francis Gaunt and Lady Barham. Messrs. FRANK CANT AND Co. were awarded third prize for a very creditable collection.

There was only one exhibit of 18 Teas or Noisettes, but the first prize was awarded to Messrs. D. PRIOR AND SONS for a beautiful set of which Mrs. Edward Mawley, Madame Jules Graveaux, W. R. Smith, White Maman Cochet and Nita Weldon were particularly good.

In the class for three blooms each of 12 varieties there were five exhibitors, and the first prize collection of Messrs. B. R. CANT AND SONS was one of the best we have seen at Windsor. The triplets of Caroline Testout, Lady Barham, Golden Emblem, Coronation, Mildred Grant, Mrs. George Norwood and E. Godfrey Brown were well high perfect; 2nd, Messrs. F. CANT AND Co., who showed Mildred Grant, Mrs. J. Laing, Mrs. George Norwood and Modesty in excellent condition; 3rd, Messrs. D. PRIOR AND SONS.

Five competitors also set up a dozen blooms of any H.P. or H.T. Rose, and here chief honours fell to Messrs. D. PRIOR AND SONS, who had splendid blooms of Snow Queen; 2nd, Messrs. B. R. CANT AND SONS, with Mrs. George Norwood; 3rd, Mr. E. J. HICKS, with Mrs. E. J. Hicks. The best dozen blooms of any T. or N. Rose were those of Mme. Jules Graveaux, shown by Messrs. D. PRIOR AND SONS; 2nd, Rev. F. R. BURNSIDE.

Class 7, which required 12 blooms each of any white and crimson Rose, shown in separate baskets, was disappointing in that two exhibitors showed their blooms on boards and suffered disqualification, the first prize being awarded to Messrs. D. PRIOR AND SONS. There were only two exhibits of 12 bunches of Decorative Roses, and these were of fairly even merit. The first prize was awarded to Mr. GEORGE LILLEY, for splendid bunches of such Roses as May Marriott, Constance, Betty and Iona Herdman; 2nd, Messrs. G. JACKMAN AND SONS.

OPEN AMATEURS' CLASSES.

The competition in this section was rather disappointing, the amateurs did not compete to the extent that was anticipated, but the quality of most of the blooms was particularly good. The best Rose in the show was in the premier amateurs' class, of the variety Mabel Drew, shown by Mr. F. DENNISON. The Windsor Challenge Cup, offered for the best 24 blooms, distinct, was won by last year's holder, Dr. C. LAMPLUGH, Ailverstoke, with an excellent exhibit. His blooms of Mrs. C. Russell, Muriel Dickson, Lyon Rose, Mrs. B. Walker and Mrs. C. West were especially fine. Mr. F. DENNISON, who has won the cup on three previous occasions, was a close second, and besides having the best bloom in the show, had beautiful specimens of Mildred Grant, Mrs. Ed. Mawley, Bessie Brown and Snow Queen.

Mr. DENNISON showed best of three competitors for the Islet Cup, and his triplets of eight distinct varieties included splendid blooms of Avoca, Yvonne Vacherot, J. B. Clark and Mildred Grant; the blooms from Dr. LAMP-

LOUGH, who was second, were a trifle weather-stained, but of good size. Mr. J. B. FORTESCUE had a beautiful collection of 12 Teas, which included particularly good blooms of Mrs. Foley Hobbs, Alex Hill Gray, Auguste Comte, Medea and Souv. de Pierre Netting; Dr. C. LAMPLUGH was second, and the Rev. F. R. BURNSIDE third in this class.

Dr. C. LAMPLUGH was first in the class open to growers of fewer than 2,000 plants, with a good collection of such sorts as A. Hartmann, Mrs. Elisha Hicks and Avoca; in the class for smaller growers, Mr. G. C. SAWDAY was successful.

LOCAL CLASSES.

Great interest was aroused in the Awards of three N.R.S. Bronze Medals to the best blooms in local classes: Mr. J. B. FORTESCUE had in a splendid bloom of Mrs. Foley Hobbs, the best Tea Rose; the Rev. F. G. A. PHILLIPS, with a glorious bloom of Snow Queen, won the H.P. Medal for a white variety; Mrs. A. L. F. COOK, for a shapely and well-coloured flower of Mrs. J. H. Welch, received the Medal offered for the best bloom of a H.T. variety.

The premier prize in this section was won by Mr. G. SAWDAY with 18 very good blooms; those of Dean Hole, Candeur Lyonnaise and Mrs. H. J. Welch were very fine. Mr. J. B. FORTESCUE was a very good second. Mr. SAWDAY also won the Challenge Cup for the best six blooms, while Mr. FORTESCUE was the most successful exhibitor of 12 Teas or H.T.'s, or for six blooms of any T. or N. Rose, with splendidly coloured blooms of Auguste Comte.

Decorative Roses were well shown. Mr. COOK excelled in both classes with especially good vases, and he also won the first prize for nine distinct blooms in the class for small growers.

The ladies' decorative classes were a pleasing feature. Mrs. CHARLTON was first, and Mrs. A. ROBINSON second with gracefully arranged baskets of Roses, while in the dinner-table class these positions were reversed.

The Prince of Wales offered a Challenge Cup for the best 18 varieties of Sweet Peas, arranged on a 12 ft. run of staging, and this was won by Mr. J. W. WILLECOMBE, a local cottager, with a superb collection, and he also won the N.S.P.S. Medal for the best vase in the show. His exhibit was of consistent high quality, but perhaps the very best blooms were of Hawmark Pink, Hercules, Doris, Daisybud, and Mrs. Wakefield. Mr. C. ROMANE, showing good vases of Hawmark Pink, Elfrida Pearson and Mrs. Hitchcock, won the Mrs. Bewil Fortescue Sweet Pea Cup.

FRUIT AND VEGETABLES.

These were of very high quality, and it must be a sign of the times that they received an unusual amount of attention from the many visitors. With splendid fruits of The Bedford, Mr. J. B. FORTESCUE won first prize for Strawberries. Collections of vegetables were particularly meritorious. Mr. E. A. H. MOSENTHAL won the Society's prize and also Messrs. Sutton and Sons' special award, with superb collections. His exhibits of Sutton's V.C. Pea were in each instance superb. Messrs. J. Carter and Co.'s special prize was won by Miss BOOTHBY-HEATHCOTE, who included excellent dishes of Royalty Potato and Carter's Early Morn Pea.

TRADE EXHIBITS.

The trade exhibits contributed largely to the success of the show at Windsor, and in this connection it was pleasant to hear the popular hon. secretary at the luncheon make public acknowledgment of the debt the Society owed to the trade for their whole-hearted support.

Mr. C. TURNER always brings of his best from Slough, and he displayed excellent groups of Roses, other hardy shrubs, and herbaceous flowers, and a most admirable collection of Malmaison and perpetual-flowering Carnations. Messrs. G. JACKMAN AND SONS exhibited everlasting Peas and many herbaceous flowers, while Messrs. STUART LOW AND Co. showed greenhouse Carnations and Orchids, and Messrs. S. BIDE AND SONS brought a large collection of the best Sweet Peas. Non-competitive collections of Roses were contributed by Mr. C. TURNER, Mr. ELISHA J. HICKS, and Rev. J. H. PEMBERTON.

ROYAL HORTICULTURAL

TUESDAY, JUNE 29.—The exhibitors and early visitors at the Royal Horticultural Hall on this date had a great and pleasant surprise. Her Majesty Queen Mary, accompanied by Princess Mary, visited the exhibition and made a tour of inspection, under the guidance of Lord Lambourne and Mr. W. R. Dykes. The royal visitors were greatly interested in the exhibits and stayed in the hall for the better part of an hour.

Exhibits were not so numerous as usual, nevertheless the display was a bright one and consisted largely of Delphiniums, Sweet Peas, Streptocarpuses, Orchids and alpine plants. During the afternoon Mr. H. R. Darlington gave a lecture on Garden Roses.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, W. A. Bilney, Sydney Morris, E. A. Bowles, R. C. Notcutt, Jas. Hudson, John Green, John Heal, W. P. Thomson, G. Reuthe, W. B. Cranfield, Andrew Ireland, J. W. Barr, J. F. McLeod, R. W. Wallace, W. Cuthbertson, Chas. Dixon, Chas. E. Pearson, J. T. Bennett Poë, W. G. Baker, C. Williams, H. Cowley, E. H. Jenkins and H. R. Darlington.

AWARDS OF MERIT.

Delphinium Blue Queen.—A single variety, with medium-sized, shapely flowers neatly set on the columnar spike. The colour is clear medium-blue with a blackish-brown centre. Shown by Messrs. BLACKMORE and LANGDON.

Delphinium Miss Marjorie Ferguson.—A charming, semi-double variety, with large flowers of a clear shade of Wedgewood blue. Shown by J. FERGUSON, Esq. (gr. Mr. F. Smith), The Hollies, Weybridge.

Sweet Pea New Verdun.—A handsome variety, bearing finely-formed flowers. The standards are rich cerise, almost scarlet, and the wings rose, flushed with cerise. Shown by Mr. R. BOLTON.

Sweet Pea Colne Valley.—This is a large flowered variety of a pleasing soft shade of helio-blue. Shown by Mr. ROBERT BOLTON.

Foxglove, Shirley Strain.—This splendid strain of Foxglove originated with the Rev. W. Wilks, who gave seeds to Mr. W. B. Cranfield, who, in turn, carried out a process of selection and has now produced a strain remarkable for its robustness and beauty. Some of the plants shown were 9 ft. high, and in several instances the inflorescence was 5 ft. long. A striking characteristic of the strain is the wonderful blotching of the large flowers. In the white form the blotching is brown, and in coloured forms it varies in the shade of purple, as also it does in the size of the markings. As shown, the strain is of great garden value. Shown by Mr. W. B. CRANFIELD, Enfield Chase.

GROUPS.

Messrs. SUTTON AND SONS were represented by a large group of finely-grown Sweet Williams, the varieties being Sutton's Scarlet, Giant White and Pink Beauty (Silver Grenfell Medal). Messrs. H. B. MAY AND SONS showed forms of Nephrolepis in great variety, associated with Hydrangeas and Heliotropes (Silver Banksian Medal). Messrs. R. and G. CUTHBERT displayed the brilliant Tritonia Prince of Orange, and filled a considerable space with freely-flowered plants of their fine strain of large-flowered Streptocarpuses (Silver-gilt Flora Medal).

Sweet Peas, fragrant, beautiful in colouring and of dainty form, were exhibited in pleasing fashion by Mr. ROBERT BOLTON, whose large group was a centre of interest. Tangerine, Surprise (new, pink), Picture, Cheerful and Valentine were among the leading varieties (Silver-gilt Flora Medal). Mr. H. DAMERM had a small exhibit of Sweet Peas, in which the blue Princess Patricia appeared to be distinct (Bronze Flora Medal). Mrs. HEAVEN, Woking, was awarded a Bronze Grenfell Medal for Sweet Peas.

Messrs. R. H. BATH showed a collection of Delphiniums which included fine spikes of Lorenzo de Medici, Ballard, deep purple; Pierre Petit, soft blue; and the double D. ranunculoides (Silver Grenfell Medal). Varieties of Chrys-

themum maximum—Beauty of Bath, Rentpayer and Alpha—provided the chief feature of a group of hardy flowers from Messrs. RICH AND CO. (Bronze Grenfell Medal).

Mr. REUTHE showed hardy shrubs and plants in great variety, some notable kinds being Carpentaria californica, Styax japonica, Crinodendron Hookeri, Spiraea Veitchii, Gaya Lyallii, Eremurus Bungei and Cypripedium spectabile (Silver Flora Medal).

Messrs. ALLWOOD BROS. contributed beautiful flowers of good Carnations and fine examples of Dianthus Allwoodii Robert, Harold, Susan and Joan (Silver Banksian Medal). Mr. C. ENGELMANN also showed Carnations and had very fine flowers of the brilliant fancy variety named Iona (Silver Banksian Medal). In the Rev. J. H. PEMBERTON's group of Roses, the most conspicuous varieties were Pax, Prosperity, Ceres and Haverling Rambler, all of his own raising (Bronze Flora Medal).

Mr. W. WELLS, Jr., showed splendid spikes of Delphiniums The Alake and Mrs. A. Carnegie, with Alstroemerias and Sidalceas (Silver Banksian Medal). Mr. MAURICE PRICHARD contributed a handsome group of Iris Kaempferi varieties, Delphiniums, Lavatera Olbia, Poterium obtusum, Mesembryanthemum falciforme, Hemerocallis Baronii, Aconitum Napellus albus, and the pale blue Campanula latifolia M. Prichard (Silver Flora Medal).

Messrs. BLACKMORE and LANGDON exhibited Delphiniums extensively and massed the glorious large-flowered, dusky purple-blue variety Sir Douglas Haig, in the centre of the group; the individual flowers were 2½ inches in diameter (Silver Flora Medal). Mr. F. GIFFORD showed an unnamed seedling Delphinium, with flowers of wonderfully good form and size, blue, with large blackish-brown centre. Helenium cupreum Crimson Beauty, shown by Messrs. G. JACKMAN AND SON, had not sufficiently expanded its flowers to show the wonderful colouring to full advantage.

Heuchera tiarelloides was quite charming in Messrs. R. TUCKER AND SON's group of hardy plants, and Campanula pusilla pallida was also very fine (Bronze Flora Medal). Mr. CLARENCE ELLIOTT's collection of hardy plants included a batch of Dianthus Atkinsonii, a blaze of crimson-scarlet; D. Old Rose, a large-flowered, single variety; and Campanula pusilla Miss Willmott (Bronze Flora Medal). Messrs. MAXWELL and BEAL, new exhibitors, displayed border and alpine plants in variety (Bronze Flora Medal). Messrs. W. J. GODFREY AND SONS and Mr. DOWNER showed Scabious and Gaillardias respectively, and Mr. G. W. MILLER showed a large assortment of seasonable hardy flowers (Bronze Banksian Medal). The Misses HOPKINS (Bronze Banksian Medal) were also exhibitors of hardy flowers.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, Richard G. Thwaites, Pantia Ralli, W. J. Kaye, Fred K. Sinder, Chas. H. Curtis, A. McBean, J. Armstrong and J. E. Shill.

AWARDS.

FIRST-CLASS CERTIFICATE.

Laelio-Cattleya San Juan The Dell variety (L.-C. Aphrodite × C. Mendelii), from Baron BRUNO SCHRÖDER, The Dell, Englefield Green. A very handsome hybrid with showy flowers over eight inches across. Sepals and petals light rose, with silver-white bases. Lip broad, bright ruby-purple, with yellow lines from the base.

Odontoglossum Victory var. Supreme (crispum × Dreadnought), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. This is the finest development of the Victory strain raised by this firm, one form of which, in the seedling stage, secured a Preliminary Commendation. The perfectly-shaped flower is four and a quarter inches across, petals one and three-quarter inches wide and sepals and lip nearly equally broad. The inner two-thirds of the segments are bright Indian-red, with an orange tint, all the segments, including the lip, matching. The margins and front of the lip are clear-white.

Miltoniodes Harwoodii var. Excelsior (Cochlioda Noezbiana × M. vexillaria var. Queen Alexandra), from Messrs. CHARLESWORTH AND CO., Haywards Heath. Awards have been given to several varieties of this handsome hybrid, but this novelty is by far the best. The fine spike bore many pretty, flatly-arranged flowers, in which the shape of the Miltonia predominates. Sepals and petals rosy-red, lip, rose with yellow disc and reddish markings in front of the yellow crest. A Cultural Commendation was also given.

AWARD OF MERIT.

Odontioda Blue Bird (Oda. Coronation × Odm. Armstrongiae), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. One of the brightest of the new Odontiodas, the perfectly-shaped flowers being mainly of a bright, ruby-red colour, the Oda. Coronation pattern showing through in darker shades. A few white lines traverse the segments, and the front of the lip is blush-white.

GROUPS.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for an extensive group in which their fine Miltonias, with Odontiodas and Odontoglossums, formed the main feature. Specially remarkable was a selection of white and blush-white varieties of Cattleya Mendelii and C. Warszewiczii, including in the latter class the pretty variety Mrs. E. Ashworth. A splendid hybrid in this group was Laelio-Cattleya General Maude var. Rubens (L.-C. Rubens Lambaeanum × C. Hardyana), which was thought to be better than the form for which the firm secured a F.C.C. previously.

Messrs. J. and A. McBEAN, Cooksbridge, were awarded a Silver Banksian Medal for a pretty group of good Odontoglossums, Odontiodas and other showy hybrids, the Odontoglossums especially showing the fine effect of the Cooksbridge treatment.

R. G. THWAITES, Esq., showed, for recording, his new Odontocidium Thwaitesii (Oncidium tigrinum × Odontoglossum crispum), a most interesting hybrid.

Fruit and Vegetable Committee.

Present: Messrs. E. A. Bunyard (in the chair), Geo. F. Tinley, S. B. Dicks, P. C. M. Veitch, F. Jordan, J. C. Allgrove, W. H. Divers, W. Bates, W. Wilks, S. T. Wright and James Vert.

A Silver Banksian Medal was awarded to Messrs. G. G. WHITELEGG AND CO., Chislehurst, Kent, for an exhibit of Strawberries and Currants. The former included the varieties Hatfield Victor, a dark-red, wedged-shaped fruit of large size; and The Premier. The Currants included the new Littlecroft Beauty, a variety with very large berries; Ruby Castle, and Orpington Prolific, the last shown as branches cut from the bushes and bearing abundantly.

Mr. J. J. KETTLE, Corfe Mullen, near Wimborne, Dorsetshire, showed his perpetual-fruited Raspberry Lloyd George, which received an Award of Merit on November 4, 1919.

Messrs. LAXTON BROS., Bedford, exhibited Strawberry Laxtonia, a dark-coloured variety of good flavour, and stated to be of robust constitution and a good cropper. The Committee recommended the variety for trial at Wisley.

TRADE NOTES.

The Directors of Messrs. Charles Sharpe and Co., Ltd., Sleaford, have decided to convert the business into a public company. An offer of shares and debentures will shortly be made, and the capital of the new company will be £200,000.

Mr. John Klinkert, Topiary Specialist, Royal Kew Nurseries, Richmond, has been honoured with the Royal Warrant by the Queen of the Netherlands. This Warrant has never before been granted to anyone residing outside the Netherlands.

Obituary.

Malcolm Stalker.—Many of our readers will regret to learn of the death of this highly esteemed gardener, which took place on June 3 at Bedgebury Cross, Goudhurst, Kent, where he had lived in retirement for the past twelve years. Mr. Malcolm Stalker was a native of Carradale, Argyllshire, and served in the gardens at Poltallook, Castle Craig, Coombe Abbey and West Hill House (Epsom). He was eventually appointed gardener to the first Earl of Cranbrook, at Hemsted Park, Kent, where he remained for forty years. He had attained the ripe age of 83 years.

W. J. Middlebrooke.—Horticulturists all over the country will learn with deep regret of the death of Mr. W. J. Middlebrooke, of Poole House, Thruxton, Allensmore, Hereford, in his 70th year. For some time past he had not been in good health and the end came peacefully on June 10. His remains were conveyed to Leicester and interred in the Belgrave Cemetery on June 15. Mr. Middlebrooke was well known in the horticultural world as an exhibitor at the leading English and Scottish shows. He commenced his gardening career at Alton Towers under the late Mr. Whittaker. He was employed as journeyman and foreman in some of the best gardens in the Midlands and north of England, after which he joined the nursery trade with the late Mr. Benjamin Witham, who had large nurseries at Redditch, near Stockport. Later, Mr. Middlebrooke was employed by Mr. James Cole, of Withington, near Manchester, and subsequently carried out several large works under the late Mr. Milner, and for Mr. William Barron, of Barrowash. The chief landscape undertakings carried out under his supervision were the Abbey Park, Leicester; the public parks at Grimsby, Wolverhampton, Wednesbury and Bedford, and alterations at Welbeck Abbey, Clumber, Stanford Hall and Clumber. He was for ten years in Messrs. G. Bunvard and Co.'s employment at the Maidstone Nurseries and afterwards became general manager to Messrs. J. Veitch and Sons, supervising the laying out and erection of offices, stores and glass at their Feltham nurseries. In 1904 he was appointed manager of the pomological department of the old-established King's Acre nurseries, Hereford. During his period of service with this firm he came prominently to the front as a successful grower and exhibitor of pot fruit trees. The last years of Mr. Middlebrooke's active life were quietly spent in acting as a horticultural adviser and working a Herefordshire small holding.

ANSWERS TO CORRESPONDENTS.

ANTS IN PEACH HOUSE: G. A. Slightly moisten pieces of loose sponge with treacle and set them on boards near the trees. The ants will enter the sponges and when they crowd together to obtain the treacle drop the sponges into boiling water. Where there is no fear of harm to human beings or domestic animals one of the arsenical pastes may be used. If the ant nests can be discovered, and they are where no harm would follow the method, pour boiling water into the nests.

BRAMBLE GROWTHS WITH GALLS: R. W. R. The galled brambles are the work of *Diastrophus rubi*, a gall wasp belonging to the family Cynipidae. It occurs generally distributed in many European countries, but where it is found is quite local.

CATERPILLARS ON RED CURRANTS: A. K. The caterpillars are the larvae of the Gooseberry and Currant sawfly, *Nematus ribesii*. Those that have assumed a light yellowish-green colour have made their last moult and are prepared to go down into the ground to pupate. There are at least three broods during the summer. Owing to the presence of berries at this time of the year arsenical insecticides cannot be used, but McDougall's Katakilla is usually fairly effective if the spraying is done

thoroughly. After the berries are harvested, if there are still caterpillars to be seen, spray with lead arsenate at the rate of 1 lb. of paste to 20 gallons of water. This specific should be used as a preventive next spring just before the flowers open, remembering that the first generation of caterpillars generally appear in the middle of the bush.

DOUBLE ORCHID FLOWER: R. O. The cause of the doubling of the Orchid flower you sent us is fasciation, the stem having divided as if to form two flowers, and then joined again, the parts of the single flower doubling. It is not a common phenomenon in Orchids.

ENTERTAINMENTS TAX AND HORTICULTURAL SHOW: G. B. As you are including in your exhibition a band, amusements and side-shows of various kinds, it will come within the province of events subject to Entertainments Tax.

FORMALIN AS A CURE FOR WHITE FLY: W. S. We have no personal knowledge of the value of formalin as a cure for white fly in Tomato or plant houses. Formalin placed in shallow vessels and set in a dwelling room will keep house flies away.

MELON FRUITS SPLITTING: A. S. The splitting of Melon fruits just as they are beginning to ripen is usually attributed to an excess of moisture at the roots. Varieties which are addicted to splitting should be allowed a little extension of lateral growth.

MUMMY PEA: J. L. This is known as the "Crown" or "Mummy" Pea. It is a variety of the common Pea, *Pisum sativum*. The legend that the original seed was found in a mummy's tomb is not now generally credited.

NAME OF FRUIT: J. M. The Apple resembles Dumelow's Seedling, but it is a poor specimen. Send a better one in due course.

NAMES OF PLANTS: E. P. 1. *Deutzia crenata* flore plena; 2. *Rhus Cotinus*; 3. *Spiraea arifolia*; 4. *Spiraea palmata rosea*; 5. *Spiraea Douglasii*; 6. *Cornus Spathii* variegata; 7. *Centranthus ruber*; 8. *Ginkgo biloba* (the Maidenhair tree).—O. F. We cannot undertake to name Roses, but doubtless, if you send the blooms to the nurseryman from whom you bought them, he will name them for you.

—E. W. 1. A species of *Laelia*; 2. A species of *Odontoglossum*. Send when in flower; it is not possible to name the plants from a leaf and pseudo-bulb only.—F. M. *Collinsia bicolor*.—M. and Co. 1. A semi-double form of *Rosa rugosa*; 2. *Olearia stellulata*; 3. *Epimedium* sp., send when in flower.—H. R. *Centranthus ruber alba*.—J. B. P. Probably a species of *Tamarix*; specimen sent not sufficient for identification.

NARCISSUS BULBS EATEN: J. M. The bulbs are attacked by the Narcissus Fly, *Merodon equestris*. The fly may be recognised by the very shrill sound it makes, and should be caught during May by means of a butterfly-net. Bulbs which are suspected of being infested should be soaked for two hours in a bath of water at 110° Fahr.

PEACH LEAVES FALLING: H. J. K. The trees are attacked by the fungus known as the "Shot-hole Fungus" (*Cercospora circumscissa*). Spray next spring, just when the leaves are expanding, with the ammoniacal solution of copper carbonate, and repeat at intervals. Do not attempt to use Bordeaux Mixture, however much diluted, as the leaves of Peaches are too delicate for such treatment, with this specific.

POTATOS FALLING: O. H. (Catford). The cause of the failure of the Potatoes is that the "seed," when planted, was over-ripe. This defect was further aggravated by an attack of wire-worm. Trap the pests on cut pieces of Potato placed along the rows; these pieces should be collected and burnt every morning.

RENEWAL OF LAWNS: I. Lawns which have been allowed to produce hay during the war period may be gradually brought back into a close and even condition by the use of the

scythe, followed in due course by the mowing machine. When the latter is first used the knives must not be set too low. At this season of the year the box should not be used on the machine as the mowings when decayed will assist the roots of the grasses. A light dressing of very rich, finely sifted soil, evenly spread over the lawn and well watered in will prove of immense benefit, and should be applied as soon as possible. A combined dressing of kainit and superphosphate may be given in the autumn. Basic slag may be used if there is no objection to an increase of Clover in the lawn. Sulphate of ammonia and nitrate of soda should not be used on lawns as they encourage the growth of the coarser grasses.

SMALL HOLDING: J. B. F. As you are only able to supervise the working of a quite small holding we should advise you to let the surplus land as allotments, if there is a demand for them in the locality. Much hard labour is necessary to make vegetable crops give a good return, especially as the land has lately been used for agricultural purposes and thus is in a totally different condition from that required for intensive vegetable culture. At present, green vegetables, such as Cabbages, are making low prices. With the multiplication of small holdings, prices are likely to be low for the commoner types of vegetables, consequently we hesitate to advise inexperienced persons to commence business as growers. To plant an acre with Potatoes, requires 14 cwt. of "seed." Ploughing would cost 30s. per acre, and should be done several times. If farmyard manure at the rate of at least 10 tons per acre is not available, superphosphate at £8 per ton, and sulphate of ammonia at £20 per ton will prove expensive items. Then there is the general routine of hoeing, earthing-up, and lifting of the crop, which might yield eight tons per acre. There are other vegetables that would pay, such as Brussels Sprouts, Carrots and Beans, but little can be done before the autumn, except clearing the land.

TENNIS COURT: L. E. S. A full-sized double court for tennis measures 36 ft. by 78 ft., but lawns on which such a court is marked should be at least 56 ft. by 98 ft. Full particulars of how to make both a single and a double tennis court are given, with plan, in the *Calendar of Garden Operations*, obtainable from our publishing department, price 2s. 5d., post free.

TRAINING FOR HORTICULTURAL INSTRUCTOR: Everton. Your educational qualifications and horticultural experience should enable you to fill a position as horticultural instructor, provided you have a gift of ready speech and are able to teach as well as to practice.

VINE AND MELON LEAVES INJURED: J. T.—We have subjected the leaves to careful examination but find no evidence of fungous disease, we therefore conclude that the trouble is due to some error in cultivation, such as an excess of water at the roots or an unduly strong application of some fertiliser.

VINES ATTACKED BY MILDEW: A. S. Syringe the Vines immediately, in sunny weather, with sulphur mixed with water. First make a paste by mixing the sulphur with a little soapy water, and then dilute sufficiently to enable the syringe to draw it up. The sulphur will do no permanent harm to the berries so long as the shade temperature does not exceed 85°. The sulphur may be syringed off with soft water in a fortnight's time. (We regret delay; this information was sent you by post, to the address you gave us, but the letter was returned "not known.")

XYLONITE FOR LABELS: E. H. G.—Xylonite for labels may be obtained from the leading horticultural sundriesmen. You should state whether you require the material in sheets or cut up into labels of various sizes.

Communications Received.—Dr. D. (Thanks for 2s. 6d. for R.G.O.F.)—A. H.—H. J. W.—M. E. S.—Sir J. C. J.—F.—H. J. C.—W. K.—J. C. S. and Sons, Antwerp.—J. E.—W. H. W.—W. C.—H. P.—C. A. J.—W. K.—H. W.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 65.19.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, July 7, 10 a.m.: Bar. 29.6; temp. 58°. Weather—Raining.

The Growth of Trees.

A new phase in the study of the rate of growth of trees—a subject of great practical and theoretical interest—has been opened by Dr. D. T. MacDougal and his colleagues of the Desert Laboratory, Tucson, Arizona, an outlier of the Carnegie Institute of Washington. Recognising that sufficiently numerous and accurate results may not be expected by ordinary methods of direct measurement, Dr. MacDougal has designed and put into use an automatic growth recorder or dendrograph, which may be so affixed to a trunk as to give a constant record of every change in girth which the tree undergoes during the year. Although it will take some years before data are accumulated sufficient to admit of general conclusions on tree growth, the results already obtained are remarkably interesting and suggestive. Measurements were made during 1919, of the girth of trees of the following kinds: Arizona Ash (*Fraxinus arizonica*), *Pinus Chihuahuana*, Monterey Pine (*Pinus radiata*), *Quercus agrifolia*, *Fagus grandifolia* and Plane (*Platanus occidentalis*). The dendrograph affixed to an Ash which was 14 years old, with a girth of one metre, showed that enlargement of the trunk began on April 10, and that daily enlargement and shrinkage continued till the end of October, when a net increase of 45 mm. (1½ inch) had been achieved. Each daily increment of growth

however, is not the result of a regular increase, but represents a balance between diurnal shrinkage and nocturnal expansion of the trunk; shrinkage taking place between sunrise and 4 p.m., and increase from 4 p.m. till sunrise—so that the Ash "like the grass, grows fastest by night." It is noteworthy that both shrinkage and expansion reached their maxima in May, and it seems probable that the diurnal shrinkage is to be ascribed to direct loss of water from the trunk. In the case of *Pinus Chihuahuana*, enlargement of the trunk began on April 14, and continued till May 4, when occurred a period of shrinkage without enlargement, which lasted till May 28, when the trunk began again to show enlargement, and continued to do so till June 14. Then occurred a second period of quiescence with marked shrinkage in late June and into the summer rainy season, enlargement being resumed on July 20, and continuing until mid-October. It is noteworthy and probably in correlation with these phenomena that the wood of this Pine shows a double annual ring. The Monterey Pine, which grows continuously throughout the year in Arizona, showed features of special interest; growing tips and trunk made growth most rapidly at night and on foggy days, but young stems of one and two years old enlarge during the mid-hours of the day, at which time the trunks show shrinkage. Thus the dendrograph reveals remarkable pulsations of growth, and the old and much ridiculed suggestion of Herbert Spencer that the ascent of sap is due to a contraction and dilation of the trunk, may prove after all to be true. The girth growth of the Oak presented phenomena of a kind similar to that of the other broad leaved trees, and it was observed that periods of retardation and stoppage of growth coincided with conditions of low humidity and high temperature—that is conditions tending to provoke excessive loss of water, thus reminding students of plant growth of Mr. Laurence Bates' observation that in Egypt the Cotton plant ceases growth as the sun gets up, stands stock still under its glare, but resumes its growth immediately if but a cloud passes across the face of the sun. With the Beech (*Fagus grandifolia*) which, like the Oak, is a tree with living bark, the daily shrinkage is much less marked than with the Pine and Ash, in which the bark dies annually, indicating that the daily shrinkage is due to loss of water from the trunk. It may be predicted with confidence, that the method of accurate and continuous measurement of Tree growth will prove of practical value in forestry research, and that the results obtained will also serve to help physiologists to resolve some of the many obscure problems relating to the growth of trees.

New Recreation Park for Edinburgh.—The Edinburgh Parks Committee has recommended the purchase of land at Rosefield Avenue, Portobello, for the sum of £1,400, to form a recreation park for the Portobello district.

Conveyance of Pot Plants by Passenger Train.—Although no written notification has been received from the Railway Clearing House, it is understood from telephonic communications received by the Chamber of Horticulture, British Florists' Federation, Horticultural Trades' Association and the R.H.S., that the Order that the conveyance of pot plants by passenger train could not be undertaken unless packed in suitable crates (which was to have come into operation on July 1) has been indefinitely postponed. It is also understood that no decision will be come to until the report from the Rates Advisory Committee, which is now sitting, has been received by the Ministry of Transport.

New Recreation Park at Dailly, Ayrshire.—Lady Marjorie Dalrymple Hamilton recently formally opened the new recreation park for Dailly, Ayrshire. The park was presented by Colonel North Hamilton Dalrymple of Bargany, and is one of several gifts of a similar kind. The ground is suitable in every way for the purpose for which it is intended.

Fruit Crops in Oxfordshire.—According to returns from growers in Oxfordshire, collected by Mr. S. Heaton, County Instructor in Horticulture, the fruit crops in the county are much below the average. Pears are very scarce, owing to damage by frost and cold winds when the trees were in bloom, and only 10 per cent. of a normal yield. Apples are also very deficient in quantity, being only 20 per cent. of a normal crop. Stone fruits are also unsatisfactory. The yields, taking 100 as a normal crop, being, Plums 25 per cent., Damsons 30 per cent., Cherries 40 per cent., and Morello Cherries, 35 per cent. Small fruits are better, and in their cases the quality is stated to be good. The yields are, Black Currants 50 per cent., Red Currants 75 per cent., White Currants 80 per cent., Raspberries 60 per cent., Strawberries 75 per cent. There are full yields in the case of Loganberries and other fruits not enumerated. The report states that Plums are badly attacked by the leaf-curling Plum Aphid and many of the tips of the shoots are dying, a condition we have noticed in other parts of the country. Too much rain was responsible for many of the Strawberry fruits decaying, and the same trouble has been experienced in other parts, whereas in some counties, notably Essex, the Strawberry crop was a failure owing to drought.

R.H.S. Diploma in Horticulture.—The Royal Horticultural Society's National Diploma in Horticulture has been awarded to the following candidates as a result of the written and practical examinations for the Diploma held this season:—Section 1 (General Horticulture)—H. W. Abbiss, 1, Richmond Road, Exeter; J. M. Dedman, 109, New Barn Lane, Rochdale; Miss L. K. Herring, Horticultural College, Swanley, Kent; C. E. Hudson, East Anglian Institute of Agriculture, Chelmsford; and Miss D. R. Jones, West Heath, Ham Common, near Richmond, Surrey. Section 8 (Horticultural Teaching)—W. G. Kent, County Education Office, Kingston-on-Thames; B. P. Perry, Horticultural Department, Holmes Farm, Kilmarnock, N.B.; and A. Simmonds, 66, Old Tovel Road, Maidstone, Kent. The following candidates have also passed the Preliminary Examination, and are eligible to take the Final Examination following their required six years' experience in gardening:—S. J. Channing, Norton Manor Gardens, Sutton Sobey, Hampshire; W. H. Christen, Piel View, Public Park, Barrow-in-Furness; H. Gebben, Mondamin, West Mersea, Essex; Miss M. H. Henning, Studley College, Studley, R.S.O., Warwickshire; J. Jarrett, Bradford, Victoria Avenue, Wellington, Shropshire; Miss L. L. Miller, Heatherdown, Hythe, Hampshire; L. E. Morgan, Queen's Park, Victoria Avenue, Crewe; A. T. Rudge, Spread Eagle Hotel, Gailey, near Stafford; Miss K. L. Syer, Charlton, East Sutton, Maidstone, Kent; F. G. Townsend, Bradwell Training School, Holmes Chapel, Cheshire; W. H. Tuck, The Homestead, Stoke Ferry, Norfolk; and G. F. Wilson, R.H.S. Laboratory, Wisley, Ripley, Surrey.

Scottish Bowling Greens.—As a result of the continuance of the boycott by the Bowlers' Association of the Edinburgh public bowling greens the Parks Committee of the Town Council has had under consideration the propriety of closing the greens on account of the lack of players and the consequent loss entailed. At a recent meeting it was agreed to close 16 out of the 19 greens, one of the three to be continued meantime being that at Portobello, in view of the expected large number of visitors during this month. It is estimated that closing the green will effect a saving of £1,300 in wages and material. A suggestion that the greens might be used for tennis and croquet was held over for this season on account of the cost it would entail to convert them for the purpose. The dispute between the Dumfries

Town Council and the bowlers using the corporation bowling greens which led to the players suspending play was but of short duration, and play has been for some time resumed. The terms imposed by the Town Council have been agreed to.

Government Huts in the Royal Parks.—Sir A. Mond, First Commissioner of Works, in a Parliamentary answer, states that the total number of persons employed in the huts in the Royal Parks is 7,658, of whom 5,651 are females. This shows an increase of 1,306 during the last three months. In answer to another question, as to when St. James's Park will be cleared of the buildings erected there by the Government, he states that, in view of the great difficulty of finding accommodation, he cannot hold out any prospect of being able to dispense with the buildings for some time.

Timber Exhibition at Holland Park.—The Empire Timber Exhibition arranged by the Overseas Trade Department in connection with a conference by experts held during the past week, was opened on the 5th inst., by Prince Arthur of Connaught. There were no fewer than 627 different varieties of timber, which have been received from all parts of the Empire, including British Guiana, British Honduras, British North Borneo, Canada, Ceylon, the East African Protectorate, Fiji, Gold Coast, India, Newfoundland, New South Wales, New Zealand, Nigeria, South Africa, Tasmania, Trinidad, and Western Australia. An exhibit which has been lent by the Society of Apothecaries consists of four chairs made from the wood of old Cedars which formerly grew in the Physic Gardens of the Society on Chelsea Embankment. The chairs known as "the Master's Chair" and "the Warden's Chair" are magnificently carved and valued at £2,000. The delegates and visitors were entertained at luncheon on the opening day by Mr. Kellaway, Comptroller-General of the Department of Overseas Trade. Mr. Kellaway, in welcoming the guests, said it was the first occasion on which timber grown in the various parts of the Empire had been brought together in one building. The exhibition will remain open until the 17th inst.

League of the Roses.—As a result of a garden fête arranged by the Highgate division of the League of the Roses and held at Totteridge Park, the residence of Mr. and Mrs. Albert Barratt, £625 has been handed to the Great Northern Central Hospital.

"Free" Sugar for Jam-Making.—The Royal Commission on the Sugar Supply announces that British West Indian grocery crystallised and Muscovado sugar may now be sold as "free" sugar for the purposes of a wholesale or manufacturing business or for the domestic preserving of fruit, at prices not exceeding those fixed as the maximum reasonable prices for the period during which the sugar is sold. Where the sugar is sold for the domestic preserving of fruit, a written undertaking must be obtained from the purchaser that it will be used solely for domestic jam making.

Furness Abbey.—The Barrow Corporation have received an intimation from Lord Richard Cavenish that the Commissioners of Works have expressed a desire to obtain control of the Furness Abbey ruins as an ancient monument of national importance. Extensive repairs are contemplated, and it is proposed to charge an entrance free in future, except on public holidays, when local residents will have free access, as hitherto.

Sad Death of a Gardener.—During a recent severe thunderstorm which passed over Berwick, George Horsey, an aged gardener, was struck by lightning at Ord, and killed instantly. He was a second cousin of Grace Darling, of whom he had interesting souvenirs.

Fire at Nostell Priory.—Many thousands of pounds worth of damage was done on Saturday, the 3rd inst., by a fire which occurred in the tapestry room at Nostell Priory, the seat of Lord St. Oswald, through the electric wires fusing. Fire brigades from Pontefract, Leeds, and Wakefield arrived, but found that the ad-

joining Nostell Colliers' Fire Brigade had prevented further damage. The gardens at Nostell Priory are famous for the summer floral display, and many noted gardeners have been trained in them.

Retirement of Mr. A. D. Webster.—Mr. A. D. Webster is retiring from H.M. Office of Works, where he has been employed in the capacity of Park Superintendent for the past twenty-four years. In addition to the management of two of the Royal Parks, Mr. Webster has had charge of some twenty of the public gardens in London, also the grounds of the Duke of York's school at Dover, which he laid out, planted and managed. Born at Balmoral, where his father was woods manager to the late Prince Consort, Mr. Webster devoted his attention quite early in life to arboriculture and forestry, and achieved much success, as evidenced by his acting in the capacity of manager of woodlands to Lord Penrhyn, the Earl of Derby, and the Duke of Bedford previous to his joining H.M. Office of Works. Mr. Webster is a Fellow of the Botanical Society of Edinburgh, and Honorary Corresponding Member of the Royal Horticultural Society. He is the author of several works on forestry and arboriculture, including *Practical Forestry*, now in its fifth edition, which during the war was adopted as a standard work by the Government, also the *Foresters' Diary*, now in its twentieth edition. Mr. Webster has given evidence on afforestation before the Board of Agriculture and was chosen by Sir Joseph Hooker as an expert on the Epping Forest Commission. He has also contributed largely to the horticultural press and has been awarded special medals for papers on forestry and arboriculture by the Highland and Agricultural Society of Scotland, and the Royal Scottish Arboricultural Society. Mr. Webster is visiting Vancouver in August, where, through the influence of the High Commissioner of Canada, Sir George Perley, in connection with the British Columbian Government, he will find fresh fields for his life-long study of trees and their timber.

Fruit Crop Prospects on July 1.—According to reports furnished to the Ministry of Agriculture, the prospects relating to bush fruit appear to be generally good. Gooseberries have yielded remarkably well and Raspberries are carrying heavy crops. The Strawberry crop, owing to early drought, was much lighter than was anticipated at the beginning of the season, and yielded only fairly. The Black Currant crop is very much on the light side. The top fruit crops are very uneven throughout the country. While one orchard appears to be giving fair crops the next one is almost a total failure. Of Plums, Monarch appears to have done well, giving in some cases heavy yields; Pershore Plums are but a fair crop and in Evesham growers expect to get about two-thirds of the average yield; Cherries are decidedly thin, and it is doubtful if many growers will clear expenses. Apples generally are scarce, though some of the early cooking varieties are bearing medium crops, and even isolated patches of Worcester Pearmain are to be found. In the Norfolk fruit area, which is but a small, though an increasing, fruit district, the Apple crop is good. Nuts, of which the Kentish Cob is probably the most famous, have not been abundantly produced this year, and something less than half a crop is anticipated. The statistics received by the Ministry relating to Plums appear to show that trees of the variety Victoria are producing only about 10 per cent., Pershore 8 per cent., Tzar 15 per cent., and Damsons 33 per cent. of the crop produced in 1919, while Monarch is giving about 15 per cent. more than in 1919.

Mr. E. H. Wilson.—Mr. E. H. Wilson, Assistant Director of the Arnold Arboretum, who is about to start on a year's trip for botanical researches in New Zealand and Australia, was recently entertained at a farewell dinner by the Boston Horticultural Club. Mr. Wilson will sail via England and the Cape of Good Hope and pass some time on his way out study-

ing the flora of South Africa, and on his return trip will visit India. Mr. John K. M. L. Farquhar, president of the club, who presided at the dinner, said it is unfortunate that Mr. Wilson will be prevented by a Federal quarantine from bringing back new plants to the United States. He said horticulturists considered the quarantine "unnecessary and excessive."

Gardeners' Royal Benevolent Institution.—Owing to great pressure on our space, we are compelled to hold over our report of the proceedings at the annual festival dinner of this fund when the sum of £3,200 was raised. The principal donors were:—Sir Harry and Lady Veitch, £105; Sir Jeremiah and Lady Colman, £36 5s.; Sir E. Stern, D.L., £50; Mr. Leonard Sutton, £10; Messrs. Rothschild and Son, £105; Messrs. W. and E. Sherwood, £105; Messrs. Sutton and Sons, £105; Mr. Reginald Cory, £52 10s.; Mr. Edward White (Milner, Son and White), £52 10s.; Mr. A. J. Wood (Wood and Son, Ltd.), £52 10s.; Mr. W. L. Cory (Cory and Co.), £52 10s.; Mr. W. Atkinson (Fisher, Son and Stray), £42; Rev. J. Jacob, £42; Mr. J. W. H. Barr, £42; Worcester Auxiliary, £60; Grocers' Company, £25; Major Churcher, £25; Trustees of the late W. Y. Baker, £26 5s.; Mr. R. W. Wallace, £25; Mr. H. J. Alexander, £25; Messrs. R. and G. Cuthbert, £21; Mr. James Sweet, £26 5s.; Mr. P. C. M. Veitch, £21; Mr. J. O'Brien, £22; Mr. John Heal, £21; Mr. R. J. Sainsbury, £21; Messrs. Geo. Bunyard and Co., £21; Mr. Whitpaine Nutting, £20; Messrs. Barr and Sons, £15 15s.; Mr. C. Frankish, £13; Mr. Arthur Dye, £12; Mr. A. Mackellar, £11 11s.; Mr. E. Beckett, £11 11s. The following contributed £10 10s. each: Lord Treowen, Mr. N. F. Barnes, Mrs. J. W. Campbell, Messrs. Cuthush and Son, Mr. G. Fisher, Mr. T. Finch, Mr. E. Harriss, Messrs. J. Jefferies and Son, Mr. J. Kinnell, Mr. M. Larsen, Messrs. Mackenzie and Moncur, Mr. E. Manwaring, Mrs. Geo. Messer, Messrs. Protheroe and Morris, Sir Marcus Samuel, Bart., Mr. S. M. Segar, Mr. Owen Thomas, Mr. W. E. Wallace, Mr. W. J. Ware, Mr. T. Coomber, £7 7s.; Mr. F. J. Chittenden, £6 10s.; Mr. J. F. McLeod, £6 6s.; Mr. E. T. Willis, £7 7s.; Mr. G. Bignell, £6. From subscribers in Covent Garden Market, Messrs. Monro's list amounted to £731 17s. 6d., and Mr. John Collingridge's list to £240.

Appointments for the Ensuing Week.—Monday, July 12:—United Horticultural Benefit and Provident Society, committee meeting at R.H.S. Hall; Bath Gardeners' Society meeting. Tuesday, July 13:—Royal Horticultural Society, committees meet at 12 o'clock, Lecture at 3 p.m.; National Carnation and Picotee Society's Exhibition at the R.H.S. Hall. Wednesday, July 14:—Wolverhampton Floral Fête, three days; East Anglian Horticultural Club Meeting. Saturday, July 17:—Brogan Horticultural Society, annual meeting.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Wireworms.*—To destroy this pest most effectually:—Towards the end of last year, when my Carnations and other plants had all been removed from my flower beds, and previous to the latter being turned up for exposure to the winter frosts, I took sulphuric acid, in the proportion of 1 gallon to 20 of water, and applied the mixture plentifully to the soil. In two days I again repeated the operation, having previously turned up the soil and seen that it had been well pulverised. After the lapse of ten or fourteen days I gave a plentiful application of powdered lime, and shortly after turned the soil up in ridges as usual. The result has been that it is now a rare thing to see a wireworm where previously I had often killed a hundred in half an hour, and where my plants were eaten up in a wholesale manner. Let anyone collect a number of these most destructive pests and put them among soil in a box and then apply the above mixture. Let him look for them next morning, and communicate the result; or, indeed, in half an hour after. This can be used on a large scale as well as on small flower-beds.—*Carnation, Gard. Chron., July 12th, 1845.*

NOTICES OF BOOKS.

Pests and Diseases of Fruit Trees.*

IN modern commercial fruit culture results depend very largely on the grower's ability to control the insect pests and fungous diseases which attack his trees. To assist him in this work he has long needed a reliable handbook covering the whole subject, enabling him to identify his enemies without loss of time, and indicating the best and most up-to-date methods of control. Such a book it has been the object of the author of this volume to supply, and it may be said at once that he has succeeded admirably. Books written by entomologists and mycologists usually give very full details of the life histories of the insects and fungi, but are weak when it comes to remedies. In the present case, the author is a chemist, who has been engaged for sixteen years in research work in connection with the control of pests and diseases. This experience has enabled him to deal authoritatively with all features of the subject. As a chemist he is competent to give full and accurate information about insecticides and fungicides; and for his research work he has been obliged to familiarise himself thoroughly with the entomological and mycological aspects of the subject. Added to this he has a particularly clear and orderly style of presenting his facts, giving all the information necessary to the practical man without forcing him to sift out unessential details.

The value of illustrations for identification purposes has been realised to the full; by the courtesy of the publishers we reproduce the excellent illustration of the caterpillars of the Lackey Moth, in Fig. 8. The grower who finds a pest or disease which he does not recognise, should have little difficulty in most cases in identifying it by means of the numerous coloured plates; and when he has done so he is referred to the text by the index numbers printed under each figure. Here he will find a good description of the insect or fungus, a brief, but adequate life history, and notes as to the species of trees attacked, symptoms of attack, degree of damage, natural enemies and preventive and remedial measures. Each subject is also illustrated, in most cases by reproductions of excellent photographs, for which great credit is due to Mr. C. Henry Fryer. Another very useful feature is a diagrammatic calendar of treatment given for each subject, from which can be seen at a glance what stage of its life history a given pest has reached in each month of the year, and when remedies may be applied.

Insecticide and fungicide materials are dealt with in separate sections of the book, and the list is a full one. The reader is guided as to the purchase of materials and shown how to prepare his spraying fluids and what type of spray to employ. There are also some useful tables showing the amount of ingredients required for trees of various sizes, a point on which most books are silent. The quantities appear to us to err on the generous side in several cases, but the figures, which are from actual experience, are at any rate near enough to form a useful guide as to the amount of material to purchase for a given acreage. A nicotine and soft soap wash is generally recommended for sucking insects, arsenate of lead for leaf-biters, and lime-sulphur in most cases as a fungicide, and there is no doubt but that these are the best washes so far discovered for use in commercial orchards.

There is an excellent section on spraying in theory and in practice. In it, spraying appliances in great variety, from the hand syringe to the big power-driven machine, are described and illustrated, and there are useful hints on the choice of nozzles to produce the right kind of spray for different purposes. Powder distribution, or "dry spraying," though not considered at present so efficient as wet spraying, has not been omitted.

Altogether the book deserves to become the standard reference work for growers. *M. G.*

* *Insect Pests and Fungus Diseases of Fruit and Hops.* By Percival J. Fryer, F.I.C., F.C.S. Pp. 728, illustrated. Cambridge University Press, Fetter Lane, London, E.C. Price 45s. net.

THE ALPINE GARDEN.

HABERLEA RHODOPENSIS.

It is difficult to imagine a greater beauty among alpine flowers which are shade-lovers than the *Haberlea* in any of its few forms, and a really large plant forms a striking feature wherever seen. The finest specimen of *H. rhodopensis* which I have seen is in the garden of Mr. W. D. Robinson-Douglas at Ordhardton, Castle-Douglas, Kirkcudbrightshire. It is in the rock garden, well shaded from the sun by a deciduous shrub, which screens it, but does not keep it too much from the light. Recently I also saw a specially fine plant, though not the next largest, in the wall garden of Commander Stirling, at Keir, Perthshire, where it is flourishing in a crevice of a retaining wall and facing north or north-west, I believe. These fine plants are

such a marked degree as some of the finest of the *Mimulus* family the failing of dying off without apparent cause after being a year or two in one position, but has a good share of the easy ways of *M. luteus*. Not that it is totally free from this failing, as more than once, in quite a long experience with it, plants which had spread into good masses disappeared entirely in the course of the winter season. Happily, the application of the useful axiom of never putting all one's eggs into one basket, served me in good stead, and other plants were available to keep up the succession. At present several plants are growing by the side of my little Water-lily pond and are stretching out their stems with their brownish-orange flowers over the water and looking quite pretty in that position. The plant varies a good deal in stature; in dry places I have had it only five inches or so in height.



FIG. 8.—CATERpillars OF THE LACKEY MOTH.

(1) After first moult, on a small branch; (2) After second moult on larger branch; (3) Before last moult: manufacturing the "tent" on a fork of a tree. All slightly reduced.

exceedingly pretty with their deep-green, wrinkled foliage, and their numerous Streptocarpus-like, purple flowers. They evidently love a shady, cool spot in a rich, but light, somewhat peaty soil. The variety of *H. rhodopensis* called *virginialis* is very beautiful, but had I to choose between the possession of the ordinary coloured *Haberlea* or the white variety I think I should prefer the former. Of *H. ferdinandi-Coburgii*, I share the feelings of some who are doubtful as to the propriety of according it specific rank. It is very fine, but *H. rhodopensis* is so variable that forms may be found among seedlings which differ little, if anything, from *H. ferdinandi-Coburgii*.

MIMULUS BURNETH.

MIMULUS BURNETH is a hybrid between *M. luteus* and *M. cupreus*, and was raised by the late Dr. Burnet, of Aberdeen. It has not to

RHODODENDRON CHILATUM.

THE complete hardiness of this charming, low-growing *Rhododendron* is open to question in some districts but the appearance of a good group in an exposed position on the rock-work of the Royal Botanic Gardens, Edinburgh, must be encouraging to those afraid to venture on its cultivation lest it should suffer in winter. The Edinburgh plants were well in flower in the early days of April, and both foliage and flowers seemed to have escaped injury, even better than in the south-west, where there is more humidity in winter than in the Edinburgh district.

The Edinburgh plants are growing on an open eminence of the rock garden where they flower freely and develop healthy, ciliated foliage. Of the varieties the typical or pinkish one is very pleasing, but the white one, *album*, seems the favourite. *S. Arnott.*

The Week's Work.

THE KITCHEN GARDEN.

By H. WHILLER, Gardener to Mrs. JENNER, Wenhoe Castle, near Cardiff.

Insect Pests and Diseases.—The Onion bed should be examined carefully and any plants turning yellow removed and burnt. The cause is either disease at the roots—a form of mildew—or damage by the Onion-fly. Filling the holes caused by the removal of the plants with a mixture of lime and soot will destroy the grubs of the Onion-fly. The final thinning should be completed and surplus young plants heeled in and kept watered. The daily supply should be drawn from these, as to continue to draw from the bed would disturb the roots of the permanent plants and prove detrimental to the growing crop. Frequently, after a spell of dry weather, root crops, Celery and winter Greens become infested with aphides, causing a considerable check to the plants. These crops should be examined, and if aphides are present the insects should be destroyed by spraying. Nicotine emulsion is a safe and certain cure for these pests.

Globe Beet.—As soon as ground is vacant a good breadth should be sown with Globe Beet. No manure is required unless the ground is poor, in which case a concentrated fertiliser should be used. Work the surface to a fine tilth, and, in drills made fifteen inches apart, place a few seeds at six-inch intervals and lightly cover them with soil. As the growing season is short, Beet from this late sowing do not become large and coarse, and may be drawn direct from the bed as required. The roots will take no harm from autumn frosts. If the weather is dry, attention must be paid to watering during the early stages of growth.

Parsley.—Parsley intended to furnish winter supplies should be sown now in an open situation, with the view to transplanting the seedlings at a later date on a dry border. The protection of temporary lights will be necessary during the winter. Hardy Winter Matchless is a suitable variety for present sowing.

Runner Beans.—The plants should now be in flower and growing freely. Secure the points of the leading growths to the supports with a loose tie where it is necessary; and, to prevent crowding, remove the laterals as soon as they appear. The plants should never be allowed to become dry at the roots, otherwise the pods will fail to set satisfactorily. At this season a thick mulch of decayed manure placed along the rows will prove beneficial in retaining the moisture in the soil.

PLANTS UNDER GLASS

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Summer Treatment of Hard-wooded Plants.—Azaleas of the indica type, that have finished their growths and have been hardened subsequently by cool treatment, may now be stood out-of-doors. The pots should be partly plunged in ashes, or in some other way shaded from the direct rays of the sun; this is very important, as the fine roots are apt to suffer if not protected in some way. The same remarks apply to Ericas and all fine-rooted, hard-wooded subjects. Ericas, Acacias, Callistemons, in fact the bulk of South African and Australian hard-wooded plants, benefit by being stood in the open for several months in summer, as this treatment causes the wood to become ripened and the plants benefit by the dews at night. They require strict attention in watering, especially during showery weather, for then the surface soil only may become moist, thus leading the inexperienced cultivator to imagine that the plants do not require watering. The

plants enumerated above, and others of a similar class, when in a healthy condition, with their pots well filled with roots, may be given frequent applications of very dilute liquid manure and soot-water. Guano also is an excellent stimulant, but the manuring of this class of plants should only be entrusted to a careful cultivator, who understands them. Manure should never be applied when the plants are dry at the roots. The plants should be syringed regularly in hot, dry weather, under as well as above the foliage. The work should be done late in the afternoon or evening, and the spaces between the plants well damped at the same time.

Sparmannia africana.—This plant should now be stood out of doors, as the hardening and ripening of the wood are essential for successful flowering.

Mignonette.—Well-grown plants of Mignonette are always welcome, and seed should be sown now to raise a batch for autumn flowering. It is not by any means an easy plant to cultivate well; many fail because they use a very light and loose compost. Lime in some form is essential for the successful cultivation of this plant. A good medium loam should be used, with little or no leaf-mould added, while old mortar rubble may be employed instead of sand. The compost should be rammed very firm, and five-inch pots are large enough for most purposes. The seed should be sown directly into them, afterwards thinning the seedlings to one strong plant. The pots should be stood in a cold frame and kept shaded until the seed germinates. When the seedlings have filled the pots with roots and are growing strongly they may be given liberal supplies of dilute liquid manure.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIX, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Peaches and Nectarines.—Continue to train in shoots of Peaches and Nectarines, and stop any that are becoming too vigorous, at a suitable lateral for forming a weaker leader. Other laterals may be stopped at the second leaf. In the case of trees growing on south walls, examine the borders occasionally and, if the soil is found to be dry, water it copiously. Trees that have been mulched, as previously advised, will need less watering than those that have not received this attention. On all hot days the trees should be syringed with clear water late in the afternoons, and syringing is especially necessary where red spider has made its appearance.

Apples.—Bush Apples are, in some cases, making considerable growth from spurs in the centre of the tree. These new growths should be thinned out at intervals. Where several shoots spring from nearly the same point they may be reduced to one or two. This will allow air and light to reach the interior of the tree. Although I am not in favour of early summer-pruning, it is desirable to take out some of the growths entirely where they are crowded. Summer pruning proper should be carried out in August.

Thinning of the Fruit.—Attention should be given to the thinning of the fruit to prevent exhaustion by over-cropping. Where possible, thin the clusters to a single fruit, for when two or three are left together they often push each other off before they have matured properly.

Fallen Fruits.—All fallen Apples should be picked up as promptly as possible, and conveyed to the rubbish fire and burnt, as this precaution will destroy many grubs of the Codlin Moth.

Wasps and Fruit.—The hot, dry weather experienced in June has been in favour of wasps breeding early. At the time of writing strong nests have already been destroyed in these gardens, notwithstanding that 305 queen wasps have been caught and destroyed on the estate. A sharp watch should be kept, and all nests destroyed immediately they are found. It is advisable to have in readiness some wasp-proof netting to protect choice dessert fruit.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Cheshire.

Epidendrum.—*E. prismatocarpum*, *E. ciliare*, *E. radiatum*, *E. osmanthum*, *E. alatum* and *E. atropurpureum* will not thrive in a close, stuffy atmosphere; therefore they should be grown either in the intermediate house or the cooler end of the Cattleya division.

All the Epidendrums mentioned need a more decided rest than those with long stems, of which *E. radicans* may be cited as an example, but sufficient moisture should be afforded the roots to keep the pseudo-bulbs in a plump, rigid condition.

Epidendrum prismatocarpum.—This Epidendrum does not need frequent disturbance at the roots, but when repotting is necessary the work should be done very thoroughly, and sufficient rooting space allowed to obviate repotting again for two or three years. With most Epidendrums the best effect is produced by arranging several growths in a fairly deep pan, and distributing them equally over the surface. The pans should be filled one-third of their depth with drainage material, and the compost should consist of Osmunda-fibre (two-thirds) and Sphagnum-moss (one-third). Make the soil moderately firm, and, for a few weeks after repotting, keep the base slightly on the dry side. When the roots enter the compost the amount of moisture should be increased, but directly the new pseudo-bulbs are fully developed a smaller quantity will suffice.

The Cattleya House.—This house contains plants in flower and others in all stages of growth. *C. Warneri* and *C. Warscewiczii* are now rooting freely and require copious supplies of water until the new pseudo-bulbs are matured. The autumn and winter flowering *C. Trianaei* and *C. labiata* will soon be showing their flower sheaths, but water will only be needed in moderation until the roots are more active, and this treatment should be afforded the numerous hybrids which will produce a wealth of flower later. *C. Bowringiana* and some of its hybrids, such as *C. Mantinii* and *C. Portia*, may be given fresh rooting material directly new roots appear at the base of the current pseudo-bulbs, which usually occurs when the flowers are removed. Any of the usual fibres provide a suitable rooting medium, with a little Sphagnum-moss incorporated with the top layer. Maintain a genial atmosphere, admit air on all favourable occasions, and remove the blinds when there is no fear of the sun's rays scorching the foliage. Strong, well-matured pseudo-bulbs produce the finest flowers. Fumigate the division occasionally to destroy thrips, which are often present in houses situated near hardy herbaceous borders.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

The Orchard House.—The crops of all early varieties of Peaches and Nectarines have been gathered and provision should be made for another year by giving careful attention to feeding, watering and syringing. Stand the trees in a sheltered position and secure them to wires to prevent damage by strong winds. The compost for repotting the trees should be prepared; it should consist of fairly heavy loam, lime rubble, burnt earth, bone-meal and a little soot.

Succession Trees.—The final thinning of the fruits having been completed all strong growths and also shoots which will be removed after the fruits are gathered should be kept constantly pinched. As soon as the fruits have passed the stoning stage, liberal supplies of liquid guano water, with ton dressings of a concentrated fertiliser should be given to the roots. If it is desired to hasten the development of the crop the temperature of the house may be raised by closing the ventilators early in the afternoon with plenty of atmospheric moisture. Liberal thinning, good feeding and syringing are imperative. A crop of fully developed fruits will

weigh as much as double that of an equal number of smaller ones, and a heavy crop of inferior fruits is a great drain on the energies of the trees in the process of stoning. If Pears and Apples are grown in the latest house, and the trees are crowded, they may be placed in a sunny, sheltered position out of doors for the fruits to ripen, but on no account should the roots lack water, as drought on one occasion may ruin the crop and injure the trees for next year.

The shoots on maiden trees of Pears, Apples, Plums and Cherries, which were potted last autumn and plunged in the open, should be pinched at about the fifth leaf, allowing the leaders to extend a foot or more. The pots will soon be filled with roots, when a mulching of decayed manure will be beneficial to the trees. Watering and syringing, the latter in the evenings, must not be neglected.

Outside Borders.—Until recently, the rainfall in some parts had been extremely light and quite inadequate to the requirements of Vines, Peaches and other fruits growing in outside borders. The borders are generally made with a foot or more of clear drainage, and principally composed of porous materials through which water passes freely. If allowed to become too dry the roots grow down into the subsoil and soon get out of control. Midseason Grapes and Peaches may be given plenty of water, and if liquid manure is used occasionally it will greatly benefit the trees. Mulching the borders after heavy rains or copious waterings frequently renders further watering unnecessary, or reduces the need considerably. Timely watering in a dry season often prevents the appearance of red spider, which, if neglected, quickly spreads over every part of the tree. The bulk of water and stimulants should be given when the fruits are swelling and stoning and the shoots in full development.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Helleborus.—Christmas Roses are now in full vigour of growth, and the plants may be lifted, divided and replanted forthwith. The site for planting should be thoroughly prepared by trenching and manuring, as the Hellebore is not seen at its best until it has been established some few years. The root-stocks should be of large size before they are divided. These plants succeed best in a sheltered situation, in moist soil and partial shade. Seedlings raised last spring should be planted out in light soil to induce growth, and watered during dry weather.

Cut Flowers.—The supply of flowers obtainable in the reserve garden is not always sufficient for the embellishment of the dwelling-house, and the number of species is not generally so great as in the flower garden proper. Judicious thinning of the flowers in the garden is decidedly beneficial, as the blooming of many subjects is thereby prolonged. This is especially true of Roses, Carnations and Chinese Asters. Water Lilies growing in pools are attractive, and when arranged sparingly, together with their noble foliage, in wide vessels, the fully expanded flowers are charming. A large variety of receptacles is essential for the best decorative effects and each should be of clear outline and soft in colour. Opaque vessels—china, silver and bronze—are in some instances preferable to glass; moreover, many flowers keep longer if the stems are not exposed to the light. Easy access to a good water supply is imperative where floral displays are required on a large scale.

Dianthus.—At the present time an application of guano may be forked into the soil around old plants of *Dianthus barbatus*, and a plentiful supply of water afforded the roots. This treatment will produce vigorous shoots from the buried joints, which will be well rooted and ready to plant out a few weeks hence. Varieties of *D. plumarius* may now be increased from pipings; pull out young shoots with a heel from the main stem, insert them in sandy soil, and cover with hand-lights or

provide a close frame. Settle the soil by watering, lightly spray the cuttings daily and shade them from bright sunshine. Damping must be prevented by admitting air occasionally for short periods. Where it is desired to save seed, protect the flowers from rain, and as they fade remove the withered petals.

Succession of Flowers.—*Delphinium*, *Pyrethrum* and *Nepeta* are amongst subjects giving a succession of flowers. Immediately all the flowering shoots of *Delphiniums* are over, cut the entire plants down to the ground level, apply a rich mulch and an abundant supply of water to the roots. A second crop of flower spikes will then soon appear. *Pyrethrums* may be shortened back after flowering to furnish a second crop of flowers in the autumn, and the same may be done with *Nepeta Mussinii*. The roots should be well supplied with stimulants, and every endeavour made to conserve the soil moisture. Seed vessels should be regularly removed from Sweet Peas.

ODONTOGLOSSUM BRONLEI VAR. BRONZEWING.

E. R. ASHTON, Esq., Broadlands, Camden Park, Tunbridge Wells, sends a flower of a remarkable variety of this cross between *O. Nathaniel* and *O. Jasper* (*amabile* × *crispum*). The flower, which is large and finely formed, is heavily blotched with reddish purple, the pure white ground showing between the markings. The outer halves of the segments have a bronze tint.

Another very handsome *O. Jasper* hybrid named *O. Bodelsmere*, is also sent; this is very broad in all its parts and blotched with mauve. Mr. Ashton also sends an intensely dark *Odontioda Brewii*, nearly black, with bronzy charet lip; *Oda. Ashtonii* (*C. Noezliana* × *Odm. Armstrongiae*), a fine red flower with white markings on the sepals and petals; *Oda. Ornata*, densely spotted with red on a cream-white ground and with lilac margin; *Oda. Adrastis* (*Oda. Bohnhoffiae* × *Odm. crispum*); and *Odontoglossum Pescatorei* Auburn House variety.



FIG. 9.—LILIAM GIGANTEUM FLOWERING IN THE ROYAL HORTICULTURAL SOCIETY'S GARDENS, WISLEY.

ORCHID NOTES AND GLEANINGS.

ODONTOCIDIDIUM THWAITESII.

This interesting cross between *Oncidium tigrinum* and *Odontoglossum crispum*, shown by the raiser, Mr. R. G. Thwaites, on June 29, presented in a marked degree the blending of the two very widely-separated parents, in colour and form. In the main, the shape of *O. tigrinum*, especially in the lip, was followed, but the flower was enlarged and its substance softer, as in *Odm. crispum*. The sepals and petals are primrose-yellow, the median two-thirds coloured with confluent lines and blotches of light sepia-red. The lip, which has the expanded front lobe and narrower isthmus as in *O. tigrinum*, is canary-yellow with a reddish blotch on each side of the isthmus and red markings on the crest.

LILIAM GIGANTEUM.

The illustration in Fig. 9 shows how splendidly the plants of *Lilium giganteum* in the wood at the foot of the rock-garden are flowering this season in the Wisley gardens. This noble Lily grows as much as ten feet high and produces several of the handsome, white, trumpet-shaped flowers on each spike. The foliage also is very striking, the individual leaves often measuring a foot long. This species needs a little protection in winter, but it is not otherwise difficult to cultivate and those who have a sheltered spot where the soil is rich and deep with plenty of moisture in summer will find it a most attractive subject for planting.

The exterior of the flowers is usually tinged with green and the interior of the throat is marked with purple.

FLORISTS' FLOWERS.

THE FUCHSIA.

Through the many changes of fashion in flowers, the Fuchsia lost, for some time in the eighties, its accustomed place in our green-houses and conservatories, no doubt partly owing to the introduction of many new plants from South America and other countries, and partly from the craze for carpet bedding which was then at the height of its popularity. When the introduction of novelties began to wane, and carpet bedding went out of fashion, the Fuchsia was once more found to be invaluable for mixed beds and other decorative purposes.

The first species was introduced upwards of a century ago from Chili by a sailor who brought a plant home to his mother who lived at Limehouse, in the East of London. This was purchased and distributed by Messrs. Lee, nurserymen, of Hammersmith, under the name of *Fuchsia coccinea*. Other species were afterwards introduced, amongst them *F. gracilis* and *F. macrostema*, from Chili; *F. microphylla* and *F. fulgens*, from Mexico; *F. corymbiflora*, *F. macrantha*, *F. serratifolia* and *F. spectabilis*, from Peru. The two last were exhibited when in flower at a meeting of the Royal Horticultural Society at the rooms in Regent Street, and were awarded Silver and Silver-gilt Medals respectively as plants of exceptional merit. One of the first hybrids was *F. Dominiana*, raised by the late Mr. John Dominy, of Exeter, for the firm of Messrs. James Veitch, of the city. The parents were *F. spectabilis* and *F. serratifolia*. The flower tube of the hybrid is some two inches in length and coloured bright scarlet; the spreading calyx lobes are of a pinkish colour on their inner surfaces. Since this plant was raised hybridists have produced numerous varieties of great beauty, and such improvements have been made, both in form and colour of the flowers, as could scarcely have been anticipated.

Very few plants are so easily grown or give such a profusion of flowers in so short a time as the Fuchsia. Neat, well-grown specimens, well furnished with blooms, may be obtained in five and six months from cuttings, and by selecting suitable varieties they may be made useful in very many ways as decorative plants.

Certain of the species, such as *F. coccinea*, *F. corallina*, *F. globosa*, *F. gracilis*, *F. microphylla* and the hybrid *Ricartonii*—are invaluable for bedding purposes, and prove to be hardy in sheltered situations well protected from frost. After the flowering season is over these plants should be cut down, and the crowns covered with leaf-mould, or ashes, to protect them from the frost. Of the hybrids the old varieties—*Amy Lee*, *Ballet Girl*, *Brilliant*, *Charming*, *Madame Cornillon*, *Mrs. Rundle*, *Mrs. Todman* and *Rose of Castile*—are amongst the best still, but none is sufficiently hardy to withstand the winter out of doors. Many varieties are very effective trained as standards and half-standards, and this type of plant may be grown with very little trouble; *Ballet Girl*, *Brilliant*, *Charming*, *Conspicua*, *General Grenfell*, *Mrs. Marshall*, *Mrs. Todman*, *Olympia* and *Starlight* are all suitable for the purpose.

Varieties most suitable for furnishing pillars or for training to the rafters of the greenhouse are *Clipper*, *Final*, *General Grenfell*, *Lustre*, *Mrs. Marshall*, *Mrs. Rundle*, *Mrs. Todman*, *Olympia* and *The Shah*. Nothing is more beautiful than a greenhouse covered from the roof with clusters of Fuchsia flowers of different shades.

Large, specimen, pyramidal-trained plants, 14 to 15 feet high, grown in large pots or tubs, are excellent subjects for the decoration of large conservatories or to stand on terraces out-of-doors in the summer. The large plants give a continuous supply of bloom during the summer and are very effective in suitable situations. Amongst others suitable for the purpose are *Brilliant*, *Charming*, *coccinea*, *corymbiflora*, *General Grenfell*, *Lustre*, *Mrs. Marshall*, *Mrs. Rundle*, and *Royal Purple*. The best months for propagation are February and March. Old stock plants require a little fire-heat to stimu-

late them into active growth. As soon as the shoots are of sufficient length for use as cuttings they should be detached, cut through neatly, close under a joint, and inserted in a pot with a compost of light loam and leaf-mould, or peat with silver sand. The pot should be filled with soil to within an inch of the top, and the remaining space occupied by silver sand. Water the cuttings gently, then place them in moderate warmth in the propagating house. When the roots have reached the side of the pot, shift the plants into larger receptacles and grow them in a more airy place, where they may be shaded from direct sunshine for a time.

Pot the old plants early in the spring; commence by shaking off the greater part of the old soil, reduce the roots and trim the branches. Re-pot the roots in good soil consisting of yellow loam (one-half), well decomposed manure (one-quarter), and one-year-old decayed leaf-mould (one-quarter), with silver-sand added. After flowering is over set the plants out-of-doors in an open space to harden the wood for the coming winter. When frost is expected, place the plants under cover, either under the stage of a greenhouse or in a shed where frost cannot reach them. They will not require watering until the spring, when they may be started afresh. *John Heal, V.M.H.*

FLOWERING CACTI.

The members of the Cactus family to which (in its term is generally applied) are a few species of *Cereus* such as *C. flagelliformis* and *C. speciosissimus*, and the different *Phyllocacti*, represented by innumerable varieties. They are at the present day not at all popular, but, judging by the many inquiries I have had of late concerning them, their return to favour is not at all unlikely.

Towards the end of the last century these beautiful *Phyllocacti* were largely cultivated by Messrs. Veitch, who raised many excellent varieties. In the 90's no fewer than 18 were given Awards of Merit by the Royal Horticultural Society. Since then less interest has been shown in these gorgeous flowers, and, in fact, I do not know at the present time a nurseryman who makes a speciality of their culture.

For some years Messrs. Veitch exhibited a fine group of these flowers at each Temple Show. The various colours, shades and tints that are to be found where a collection of these *Phyllocacti* are grown are noteworthy. A particularly notable feature is the striking combination of metallic purple and dazzling vermilion which appears to be of different tints according to the standpoint from which the flower is viewed, while the other colours are delightful. One drawback is the fugacious character of the blossoms, but in the case of well-grown plants a succession of bloom is maintained for some considerable time.

The cultural requirements of the different *Phyllocacti* are not at all exacting. In the first place they may be propagated readily from cuttings if the shoots, from four to six inches in length, are inserted in clean, well-drained pots of sandy soil, and stood on a shelf in a warm greenhouse or similar position. Enough water should be given to keep the soil slightly moist, but an excess must be avoided. A suitable compost for established plants consists mainly of loam, lightened by a mixture of broken brick rubble and sand. Repotting, if necessary, should be done as soon as the flowering season is over. After potting, the plants may be grown in a light position in the greenhouse, and be kept moderately supplied with water.

As soon as the roots take possession of the new soil, an increased amount of water may be given, and, when in full growth, an occasional weak stimulant will be helpful.

The plants may be stood out of doors during the height of the summer, but whether thus treated or kept under glass they should be fully exposed to the sun in order to ripen the wood, and ensure flowers the next season. In winter comparatively little water is needed, but the soil must not be parched, even at that season. I came across the description of a magnificent plant of *Cereus speciosissimus* in *The Gardeners' Magazine* for 1839, then edited by J. C. Loudon, F.L.S. It was growing in the stove of Mr.

Thomas Holman, of Folkestone, and was described as covering a trellis 25 feet by 8 feet, and during the flowering season it often had from 30 to 40 of its magnificent blossoms open at one time. *W. T.*

VEGETABLES.

ENDIVE.

ENDIVE is one of the most important of salad vegetables. There are two distinct types—the broad-leaved or Batavian, and the curled Endive, and of both these there are many sub-varieties. The plant grows freely, is tolerably hardy, and blanches quickly. The green curled varieties are very attractive in appearance, and "set off" to great advantage a basket of salads for exhibition purposes. Both types are highly worthy of culture, the curled varieties for appearance and they also possess good flavour, the broad-leaved for every day usefulness and high edible quality.

To produce a full supply of leaves throughout the autumn and winter, three sowings made at intervals in July, or two sowings in July and one in August, are all that are necessary. If ground is vacant it is an excellent plan to sow the seeds very thinly in drills made about 18 inches apart, thinning the seedlings immediately they are large enough to be handled; or plants may be raised in beds and transplanted, but it is highly important that they shall not be grown thickly in the seed beds, as they are neither so stout nor so hardy as when grown thinly apart.

The latest July or early August sowing is generally the most useful; this crop requires protection and it will then yield produce throughout the winter. At the approach of frost the plants may be transferred to spare frames or frost-proof sheds, and from thence, as required for use, into warm and darkened places, where blanching may be perfectly effected.

Before very severe weather occurs many plants may be blanched in the garden by covering them with pots, placed in position when the foliage is quite dry. Blanching may also be perfectly effected by completely burying the plants in dry soil. Some of the plants may decay entirely, but many will have their hearts preserved, and the leaves will be very crisp and sweet. It is of the greatest importance that they are dry when buried, and also uninjured by frost, or decay will be certain.

Salads are so generally esteemed in winter as well as in summer that good breadths of Endive should be planted, and it is during the next few weeks that the seeds should be sown. *James A. Paier.*

CELERY.

LATE Celery should be planted as soon as the seedlings are ready for transplanting, and the crop is best grown in shallow trenches. In the subsequent earthing operations the roots will be below the excavation, and the excessive winter rains will thus drain away freely, and leave the ridges comparatively dry.

The blanching of early planted Celery should be commenced as soon as the plants are large enough.

At this time of the year it is best accomplished by the use of strips of brown paper about three inches wide, wrapped around the plants to the height of the foliage; and made secure by tying at the top. Before applying the paper remove any outside leaves that are turning yellow, also any side shoots near the base. The plants should be examined frequently, to see that growth is not restricted; also for slugs and other pests; and where these are found they should be eradicated by dusting the hearts of the plants with slaked lime.

Celery-leaf spot (*Septoria apii*) has been very prevalent during recent years, and in gardens where an attack has been experienced the whole of the crop should be sprayed on several occasions with Bordeaux mixture as a preventive, there being no cure once the fungus has become established in the plants.

Plants attacked turn a greenish-brown colour; any showing an unhealthy appearance should be lifted from the row and burnt. *W.*

THE BULB SCHOOL, LISSE, HOLLAND.

AFTER a tour in the bulb-growing districts of Holland I felt constrained to describe the educational facilities which the Dutch Government extend to the sons of the bulb growers and to youths who are desirous of entering the bulb-growing industry.

Situated on the outskirts of the village of Lisse, and in the very heart of the bulb-grow-

cultivation, particularly of Hyacinths, Tulips, Narcissi and Gladioli, while such operations as cross-breeding, planting, lifting and warehouse management receive detailed attention. The student is also trained to recognise the diseases and pests affecting Dutch bulbous crops and the method of controlling them.

Correspondence, office administration, book-keeping, as applied to a bulb farm and business, surveying and commercial geography are also included in the syllabus and all these subjects are

succeeds in equipping youths with sound, practical knowledge, specially adapted to the business they are to enter.

The school is carried on under the direction of Mr. K. Volkersz, ably assisted by Miss A. Legh, and Messrs. W. A. Grummo, J. Bernard, P. K. van Littert, and B. Raptchinsky.

Not only does Holland possess a special school for bulb culture, but in other parts of the country there are schools where a complete training is given in other branches of commercial horticulture. To the writer it appears that this system of commercial education is admirable and the time may come when the horticultural student in the United Kingdom may demand an opportunity, at very little cost, of gaining a business and scientific insight into whatever branch of the huge industry he decides to enter. J. K. R.

LANTANA.

THE Lantana is not so popular in gardens as it once was. This is due, no doubt, to the fact that it is of little value for supplying cut blooms, the present-day demand for which has banished many beautiful subjects from our gardens. Still, where conservatories have to be kept gay, Lantanas are very useful, as they are free-flowering and have a wide range of colours. Young plants raised from seed or cuttings during the spring should be encouraged to make strong growth, which should be pinched to maintain a bushy habit. If required for autumn flowering they may with advantage be planted out during the summer, thus requiring less attention and making greater growth than when confined to pots. All the garden varieties of Lantanas are of a dwarf, bushy habit. The slender growing *L. salvifolia*, better known as *L. delicatissima*, makes a beautiful pillar plant for the conservatory, attaining a height of ten or twelve feet. It flowers with profusion over a long period, and its pleasing lilac-coloured flowers



FIG. 10.—THE BULB SCHOOL AT LISSE.

ing district, stands the Government Bulb School, where students receive a very thorough education and technical instruction in the practice and principles of bulb cultivation. The aim of the school is to instruct youths in the very complicated business of bulb growing and also endow them with a sound education.

Before entering the school a youth must have had at least six months' experience on a bulb farm to enable him to understand the meaning of the technical terms employed in the industry and to bring him into contact with real processes, with men at work, and with the great current of the world's industrial life. Having submitted himself as a candidate, he must then pass an entrance examination and show knowledge of such subjects as Dutch grammar, mathematics and geography. The standard required is about equivalent to that needed to pass the Cambridge or Oxford Junior Local Examination. The candidate, however, must have an elementary knowledge of three languages—English, French, and German—as languages necessarily play a very important part in the trade of the bulb grower, since his business is one of exportation to the British Isles, Scandinavia, America, France, Russia, Germany and Austria.

The course of study at the school lasts over a period of three successive years. During the flowering season of bulbs the students are given one month's vacation, wherein they have ample opportunity to study the flowers and the habits of the varieties, as well as to help with the operations on the farms at that season. Again, in the lifting and planting season they gain further experience in the field and in the warehouse and office.

From October to May instruction is given in the school. The subjects are many and varied. Pure and applied botany, with special reference to bulbs, is a principal subject, and instruction is also given in horticultural physics and chemistry. Special teaching is given in bulb

compulsory. The student may also receive additional instruction in the English, French, Scandinavian, Russian and German languages and correspondence. If he wishes, he may study all these five languages. Typewriting and stenography are optional subjects. The school examination is held at the end of each year.

The school building is a very fine structure (see Fig. 10), and the rooms are light and well equipped. The front entrance opens into a large hall and arranged on the ground floor are the director's room, staff room and library, with the chemistry and physics laboratory (see Fig. 11) and lecture rooms. There is also a photographic dark room and a work room. A Tulip flower is represented in stained glass above the central window of the hall, over the main door.

On the upper floor are the botanical laboratory and lecture room, with work rooms and private rooms. The heating is by means of hot water radiators and the lighting by gas.

There are many universities in Holland where plant research is conducted, but the Dutch Government wisely decided to house Dr. Slogteren in the Bulb School, Lisse, and it is there he has been investigating the Eelworm diseases of Narcissi.

The foregoing is a very brief and general sketch of this important institution and its work, but it is sufficient to show that the Dutch Government has entered heartily into the business of educating youths to take an important standing in a profession which means so much to the country. Holland is regarded as one of the most productive countries in the world and in bulb growing it certainly takes the lead. The bulb growers have much in their favour and can perform cultural operations which are commercially impossible in this country. The degree of proficiency which the best growers have reached is marvellous, but there should be finer results, as the school



FIG. 11.—VIEW IN THE CHEMICAL LABORATORY AT THE BULB SCHOOL, LISSE.

are very attractive. Young plants rooted last autumn should be potted on as they require it. They are useful during the end of summer and early autumn, at which period the choice of subject is limited for greenhouse decoration. Large pot specimens should have attention as regards staking and tying and should be encouraged to grow freely by feeding the roots with diluted liquid manure and soot water. Foreman.

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Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA. *

NO. 19.—THE VALLEY HEAD.

THE valley grows more and more austere up towards its close. The best pathway is by the actual stream-bed, where the rough granite rocks make admirable stepping-stones, and do not seem to be submerged, no matter how heavy the rains, or how high the floods, for more than about half-an-hour, so rapidly do these waters run away. But occasionally some little cataract forces a diversion round through the tangles of Bamboo, in which there still is nothing of interest, till by degrees the wrong Omphalogramma takes possession. These valleys all rise by jerks and starts: a long stretch of ascent, and then a level plain, and so da capo. Of lakes there are none, but each successive marshy flat in the climb seems within an ace of becoming a lake. It is already half bog, lush with grasses, sedges and rushes, interspersed with an abundance of flowers, and thriddled by silent little streams, profound and clear as diamond between their dark banks. On their margins, the right Omphalogramma Delavayi grows fat, and in their depths the mountain trout ought to be doing likewise. But, alas, all these Asiatic alpine waters are utterly void of life; and the heart of the angler grieves over Nature's folly in thus wasting waters that on the Itchen or the Test would be worth their many golden guineas a yard.

These plains of marsh are gay and luxuriant with pink Allium and golden Crepis. But one expects a new Primula in vain. Four species ought, indeed, to content the collector, within a radius of a few hundred yards; but they don't, if he has met them all before and now has a vacancy in his affections for a fresh one. The real Delavayi, citron-pale "Smithiana," the baffling wee Compsanthoid and lovely Coryphaea, though, ought to be enough to satisfy anybody. Primula coryphaea is a remarkable charmer, and one for which I foresee a successful future. It is the plant I briefly noted on the extreme summit of Hpawshi Bum, as being a powderless P. bella. But, though originally reported from the tops of mountains in Upper Burma, P. coryphaea is by no means so eclectic in its proclivities as this would seem to imply. On the contrary, it is P. bella that seems local, and bids fair to be capricious; P. coryphaea, so far from being local or exclusively half-alpine, is incredibly abundant over all the mountain zone,

in all cool, damp, silty places, and in the velvet moss-layers on boulders, seeding down so freely into the upper valleys that there were even a few tufts of it in the wet sand below the camp. But, unlike P. bella (almost exclusively a rock-plant), P. coryphaea is never seen in cliffs; it does not root down, but loves a shallow, many-fibred anchorage in damp silt or some other loose yet holding substance. Therefore, I believe that at home, in climatic conditions so like its own, P. coryphaea might even in time run wild, and rival P. farinosa in decorating the upland marshes of Yorkshire and other favoured spots; but I would suggest that, instead of being only reared in pans and carefully cosseted in the rock-garden, its seed (or some of it) should be merely smeared with the hand into the close mass of some boulder in a beck or marsh. P. bella is of quite another character and P. coryphaea is always found growing flat, with its lovely violet face upturned to heaven; but P. bella I have never, I think, seen in anything but vertical positions, hanging in loose, flat sheets a yard and more across, on precipitous banks and under cliffs, in the uppermost limit of the woodland zone, never ascending to the elevations of P. cory-



FIG. 12.—IRIS SPECIES WITH PRIMULA SMITHIANA.

phaea, and only very rarely climbing so high as 12,000 feet in these ranges (as, for instance, in a few cliff-chinks on the north side of the Cairn on Sabiya Kaw Pass). In habit, too, the plants are very distinct—P. bella always, thanks to its stoloniferous tendency, appears as a large, lax colony of single crowns, close together, but not packed; while P. coryphaea never spreads, but always sits tight in a dense, small tuftlet, dozens and dozens of them dotted all over the silt-pan or mossy flat, but hardly ever coalescing. In beauty, I think P. coryphaea wins easily; P. bella, in my experience, is of a quite pretty but rather commonplace lilac-lavender; its albino is creamy and charming, but feeble in form. On the contrary, P. coryphaea is variable, and its poorest forms are like the best of P. bella; but, typically, it is always of a much richer purple, with much more blue in its tone, and very often one comes upon blossoms of an amazing Tyrian richness, like imperial violet-velvet. And it beats P. bella, too, in never having any scape, so that the flowers sit close on the tuft, whereas in P. bella they stand off it by half-an-inch or so.

It is curious that two plants so closely akin to each other in one group of Primulas (with a third, P. sciaphila, not so far away, on Imaw Bum), should occur so freely over the same region; but the fact affords a parallel to the prevalence here, alongside the true Delavayi, of its deluding and inferior Dromio.

Otherwise the plains of marsh promise more than they perform. Autumn will bring better things, for the ornata-Gentian awaits its hour, and already a very attractive, tufted and perennial Swertia of dwarf habit is beginning to open large, flat stars of flower that vary from violet to rich sapphire, with a pleasant point of crimson-scarlet in the stigma. In the wetter marshes, too, the little white Crenanthodium runs riot; and in wetter places still, upon the gleaming white granite silt, are dotted dark-green clumps of a small Caltha, now almost wholly gone over, but of which a few poor relics allow one to see that the five-sepalled yellow stars, however pretty, can never have been of a nature to set the Thames a-fire. But, among the smaller fry, I leave to the last the real treasure of these alpine marshes. This is a bog-Iris of some eight inches in height which is certainly a thing of beauty, and a worthy peer to I. chrysographes. It very much, indeed, resembles that species in general effect, but its standards are not so dark, and its intensely sapphire falls do not attain to the midnight profundity of I. chrysographes, and their markings, though very similar, are of silver, not of gold—in prosier language, white instead of yellow. I do hear of a yellow-lined bog-Iris away on Imaw Bum, but this white-marked species is the only one prevailing here, and is very abundant in all likely places, from eleven thousand feet to the highest tops, where it may be abruptly come upon here and there, filling each little cooler fold of the long grass in the alpine hayfields immediately below the arêtes. It strikes, even from afar, a very deep note among the light pinks and yellows of the meadow; but its finest association of all, perhaps, is with the moonlit-lemony pallor of the Smithiana Primula (see Fig. 12), which haunts the like places, and is in its own fulness of beauty about the same time. Reginald Farrer.

SALVIAS.

SEVERAL species of Salvia are very useful as well as beautiful for autumn and winter flowering. Salvia splendens and its varieties are most popular for this purpose. The dwarfier forms, of which Glory of Zurich is typical, are most useful for furnishing benches and stages in the conservatory, while S. splendens var. pyramidalis is one of the best for growing into large specimens. There are also white and purple-flowered varieties, of which a few are worth growing for variety's sake.

Other popular and useful Salvias are S. involucrata var. Bethellii, S. rutilans (Pine-Apple-scented Sage), S. leucantha, S. gesneriiflora, S. Heeri, S. Azurea var. grandiflora, S. Greggii and S. rubescens. All these are useful and showy for the greenhouse and conservatory. They should now be placed in their flowering pots, stood outdoors and afforded the same kind of treatment as Chrysanthemums. Some of the kinds are very subject to attacks of red spider, therefore they require strict attention as regards watering and syringing. They may, with advantage, be planted out in the reserve garden for the summer, whence they may be lifted and potted up in the autumn. If planted out, they require much less attention as regards watering and syringing. In the London neighbourhood the flowering of these Salvias is very uncertain, as one foggy night is sufficient to strip them of every flower. J. C.

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, and April 24 and May 29.

NOTES ON THE EDINBURGH BOTANIC GARDENS.

To all garden-lovers, and to the beginner more especially, the Rock Garden at Edinburgh is interesting in late June. There are so many plants in bloom that it is easy to make a useful selection for one's own particular needs. There is more colour then, perhaps, than at any other time of year. Sun Roses and Rock Roses abound in masses of every imaginable shade; blue is well represented by Campanulas and their near relatives the Codonopsises, the lovely Italian Gronwell, and Lithospermum graminifolium, with its densely-clustered, tubular flowers of vivid hue. The air was sweet with the scent of numerous Pinks and Thymes, the latter chiefly represented by the wild Thymus Serpyllum in many varieties.

For sheer brilliance one would probably give the palm to Hieracium lanatum and Hippocrepis comosa, the former a Hawkweed with large blossoms of pure gold, well set off by its grey, woolly foliage. The latter plant is the well-known Horseshoe Vetch, which, though a native of Britain, is unsurpassed for its massed colour-effect in orange-yellow. Two other good orange flowers out on the day of my visit were Trollius yunnanensis and T. patulus, both from China and of similar appearance, bearing large, single flowers on upright stems 10 inches and 2 feet high respectively. On a sunny mound, fully exposed to sun and wind, grew that quaint little Catchfly, Silene Pumilio, from the Alps of Europe. The contrast between the small cushions of leaves and the large, almost stemless, pink flowers—lying mostly flat on the ground—is fascinating. A very interesting plant beginning to bloom was Odontospermum maritimum, from the Mediterranean regions. Four neat little specimens were growing on a sunny ledge, and the large, orange-yellow, Daisy-like flowers were handsome and well-shaped. Solidago pursilii, with stiffly upright stems only a few inches high, was like all Golden Rods in its raw, yellow-colouring and weedy appearance.

To find the exact opposite in characteristics one had only to look at the species of Codonopsis, for their drooping bells on slender stems are the essence of refinement and grace. The soft, palest blue colour, and shape of the bells were both most beautiful in two species I noticed—C. ovata and C. clematidea. These come from the Western Himalaya and are about 18 in. high, the latter having an especially good, upright habit. Campanulas were, of course, everywhere; C. Scheuchzeri and C. Marchesii like glorified Hairbells; C. rhomboidea, so showy and generous with its little dark-blue bells, an easy kind for border or rockery and particularly useful in town gardens, like so many others of this large family; and C. pulloides kewensis, noticeable for its large and rich blue bells. Dwarfier creeping kinds were C. garganica alba, C. elegans and C. Istriaca, while of more tufted habit were C. fragilis and C. excisa. C. excisa is a fairy among plants—so dainty and fragile, with hair-like leaves and stems, but 3 in. high, on which the little pale-mauve flowers nod and flutter in every breeze.

There are some plants that are particularly valuable to the ordinary gardener for their showiness and long period of bloom. Such are the Erigerons or Fleabanes, which have much also to recommend them in their hardy, healthy ways. Many of those in bloom in June will be seen still persevering into late autumn, as, for instance, E. multiradiatus and E. montanensis, which were both in bloom on a previous November visit. The first has the typical, Aster-like flower, and is large, showy and tall, though not so bright a mauve as some. E. Roylei is similar, not so tall, and of darker hue. E. Coulteri is a fine white, and E. montanensis a showy, pale-mauve, both a foot or so high. E. flagellaris is of prostrate habit and had spread into a wide sheet literally covered all over with small but well-shaped little bluish flowers, with something very attractive about their prodigality.

Two real Asters were noticeably gay. Aster sub-coerulea and A. diplostaphioides have the

brightest of mauve, orange-centred flowers conceivable, borne so jauntily on the stiffest of 15-inch stems. I have grown the former both in beds and the rockery, but find it prefers good soil, as otherwise it never seems to attain full height or size. This is the little species of which M. Correvon, of Floirac, writes: "C'est le grand Aster de nos Alpes beaucoup plus grand et plus beau."

The refined and graceful Chrysanthemum arcticum was blooming freely in a shaded part of the Edinburgh Rock Garden, with large, single, pink flowers on 18-inch stems. C. Zawadskii, white, but of coarser appearance, was also in bloom. I find in November, 1912. Draacocephalum Isabella, from China, had curious, massive heads

Certainly D. Velenowskyi is most distinct and charming, with 2 ft. long shoots ending in tiny clusters of little, pink flowers, reminding one more of a Flowering Rush than a Pink.

Linum monogynum had handsome white flowers and must be a useful species, as it was also in bloom the previous November. I close my list with a few names of plants flowering which appeared especially interesting:—Achillea umbellata major, very silvery; Erica cinerea var. rosea, fine, rich-pink colour; Nepeta kokanica mauve; Veronica catarractae and V. Lyallii, both of creeping habit, with white flowers; Polygonum macrophyllum, little pink spikes, and Aethionema schistosum, like a small pink Candytuft, very showy and free. M. E. Stebbing.



FIG. 13.—ROSE PRINCESS VICTORIA.
N.R.S. Gold Medal, July 1 (see p. 24).

of dark purple-blue, and there was a fine specimen, four feet high, of that giant among Gentians—Gentiana lutea—with yellow flowers springing from the axils of the leaves. On an opposite ledge grew Centaurea pulcherrima, from the Caucasus, a contrast in its ethereal colouring of softest rosy-mauve, with silvery foliage.

A good group of the grassy-leaved Iris Furestii had evidently bloomed well, but one or two only of its elegant, pale-yellow flowers were left. Most of the Brooms were over, but I saw Genista germanica in bloom, also the showy G. sagittalis, with its curiously-jointed stems, and Cytisus Heuffelii, with dainty, sulphur-coloured flowers on a low bush about a foot high; while Genista sylvestris was not yet in flower. There were several Potentillas blooming, also Armerias, and such a wealth of little Dianthus that it became a difficult matter to choose among them.

New Roses at Bagatelle.—We have already announced (June 19, p. 301) the fact that the Gold Medal at the Bagatelle trial of new Roses this year was awarded to Rose Frances Gaunt, and we now have particulars of the other awards. Certificates of Merit were given to President Parmentier, sent by Sauvageot, a cross between Colonel Leclerc and Le Progres, pinkish Apricot colour, very strong and free-growing; Le France Victorieuse, an H.T. hybrid sent by the Ro-ary of L'Hay, pale pink with a slightly deeper heart, very large petals; Comtesse de Cassagne, another H.T. from the firm of Guillot, petals ivory-yellow outside, lightly suffused with pink inside, very strong in growth and with a long season of flowering; and Mermid, an interesting hybrid obtained by crossing R. bracteata with an unnamed Tea Rose, the large flowers are pale-yellow.

PALMS OF THE RIVIERA.

It would be futile to discuss the question, which plants are the most beautiful of all. Almost all families of plants contain a greater or smaller number of species of beauty, and this applies even to the cryptogamous plants of the lower orders. Also the question of beauty is to a great extent one of individual taste. It may, perhaps, be said that no other plant family exists in which every single species can lay such claim to beauty as can the Palms, and so very many species rank among the most perfect types of perfect grace that everywhere Palms have attracted the attention of man, even in times, and among peoples, otherwise strange to the admiration of natural beauty.

It is thus quite understandable that those who created the gardens of the Riviera should have had such a predilection for the planting of Palms that hardly any garden exists here without them. The Palms, numbering hundreds of thousands, and many belonging to tall-growing species, will in time give a characteristic note to the landscape and create the impression of tropical scenery.

As mentioned before, the Date-palms (*Phoenix dactylifera*) are the tallest individual Palms here, but they are very old. One, which I have looked at from my place for some thirty years, and said to be between 300 and 400 years old, died some few weeks ago, and has been cut down. A few other very tall Date-palms exist here and there on the Riviera, and when of the variety with gracefully arched leaves, they are very beautiful and form a most striking feature of the landscape with their immense crown of pinnate leaves waving gracefully in the wind on a rather slender trunk of some fifteen to twenty metres height. Unfortunately, gardeners have always been in the habit of taking away the sprouts forming at the base of the young Date-palms, and leaving only the main trunk. Where in some very rare cases a few of the numerous sprouts have been left to grow, a most graceful group of stems is formed, which, bending in different directions, present an object of beauty greater than that of the single-stemmed specimens.

The highly appreciated dates are the fruits of this beautiful Palm, and a great many varieties exist, among which the Deghlet-Noor variety from the Sahara Oasis is the most esteemed.

The Dates, to arrive at perfect maturity, require prolonged hot weather, which they do not obtain on the Riviera, and not even on the North African coast; but in some of the warmest parts of Spain, notably at Elchi and Valencia, Dates, though not of the best varieties, usually mature perfectly, and if not are treated with vapours of vinegar, which brings about the chemical changes necessary to make the fruit sweet. It has been found by experiments in the United States that water vapour containing carbonic acid will produce the same result, and probably the Dates, produced abundantly also here on the Riviera and arriving at sufficient maturity to produce good seeds, could be treated successfully in this way.

But, as it happens with seedlings, now and then a plant is produced which possesses new characters. Thus some years ago a seedling Date-palm, growing in the garden of Mr. V. Cessole at Nice, which is situated in a spot which is by no means specially sheltered, commenced to produce its Dates, which proved to be of excellent quality. They are of a black colour and very sweet, but do not keep well. They have the characteristic, which I have not found noticed elsewhere, of ripening just as well whether the flowers have been pollinized or not, thus offering the advantage of being seedless at will and containing then a greater amount of eatable matter. Some years ago I called attention to this fact in the *Journal d'Agriculture Tropicale*, Paris, and other periodicals, but have so far not heard of similar cases. Indeed, it is well known that the Date-palm, which, like the other species of the genus *Phoenix*, is dioecious, requires pollination to

produce normal fruits. Since artificial pollination is always resorted to where Date-palms are cultivated for profit, it may be supposed that without such the fruits are, as a rule, not developed. The sprouts, so abundantly formed at the base of the trunk of young Date-palms, were in this case, as usual, cut away, with the most unfortunate result that this most remarkable and valuable Date-palm never was multiplied asexually, which is the only way to assure the preservation of characters in this species. Some seeds of it have been sown, but to my knowledge no seedling has reproduced the valuable fertilising characters of the mother plant. Also must it be remembered that when pollination has been done, or taken place accidentally, there is no means of knowing the influence on the character of the fruit, which might be exercised by the male parent.

In my last note the trunk of *Butia* was given as several inches; it should be metres. A. Robertson Proschowsky, *Jardin d'Acclimatation Les Tropiques, Nice, France.*

NURSERY NOTES.

STRAWBERRIES AT MESSRS. LAXTON BROS.' NURSERY.

A RECENT note in a leading daily paper affirming, on the authority of a great salesman, that the Strawberry season was limited to comparatively few days gave food for thought. Upwards of quarter of a century ago a visit to Messrs. Laxton Bros., Bedford, showed varieties whose ripening period extended over a month, as judged from the point of view of garden cultivation. The published reference was to the season of the field-grown Strawberry, and the reason why there should be a difference of a fortnight between the field and the garden in the period of productiveness is obscure, seeing that, in the broad sense, the most meritorious sorts of the market gardens are precisely those of private gardens. Again, there are the differences of soils and climates in the great centres of market culture which should, on the face of it, insure as long a season of fruits from the field as the garden, even if they are not wide enough to lengthen the period. A simple solution of the problem presented itself. Go to Laxton's and institute inquiries, since there, if anywhere in the world, true facts may be ascertained.

The intense enthusiasm which Mr. William and Mr. Edward Laxton show when plant making by hybridisation and cross fertilisation is under discussion is a result of "what's bred in the bone," for Mr. Thomas Laxton, the founder of the firm, was one of the keenest workers in plant breeding that the last century produced. It is interesting and instructive to see, too, that hereditary instinct in the same direction has descended to Mr. Edward Laxton, junr., who has already bred plants of which much is likely to be heard in the near and far future.

A remarkable fact associated with the work of plant breeding by Messrs. Laxton is that an accurate record has been kept of every cross, not in Strawberries alone, but in all other fruits, as well as many flowers. This knowledge should, it might be assumed, lead them directly to their objectives, but this is not the case. The standards of Mr. Thomas Laxton's days are not the standards of his son's age and these, in their turn, will not be the standards of the third generation. Perhaps it is safe to say that in the early days of intelligent, systematic work hundreds of crosses gave dozens of valuable rewards; later, thousands of crosses brought fewer rewards; and to-day scores of thousands of crosses bring fewer rewards still. And all this is because the Laxtons can never rest content. The plant that is good can be improved, that in its turn can be bettered and so on *ad infinitum*.

But to return to my immediate subject. Mr. Edward Laxton, guide of the moment, agreed as to the limitations of the season of productiveness and decided that soils and climates make little difference, except in the case of Wisbech,

which is always late. Thus we come to varieties as the principal consideration and one which is in some degree governable as against the natural conditions which are obviously, and happily for all peace-loving people, uncontrollable. Market favourites are limited in numbers and there is always "running-out," more especially when home propagation is carried, as is too often the case, to the utmost point. Change of stock, indisputably advantageous, is not, however, a cure-all. There must come change of varieties and herein lie two obstacles—1, the inherent conservatism of growers as a class; and, 2, the ever-present question in Strawberries whether this or that variety will flourish or fail. The common feeling is that Sir Joseph Paxton and Royal Sovereign and Laxtons have satisfied growers and therefore—Why change? The answer is that deterioration is as inevitable as the changes of the moon. The second point is easily, and at the same time inexpensively, met. Each year there should be a trial plot planted and so surely as this is done so surely will it bring a profitable reward in a variety that is immeasurably superior to its neighbours in the field.

What shall be tried, not be it understood by the acre necessarily, but by the thousand, the hundred, the score or the dozen? Two indispensable are King George and Laxtonian. The first named is sometimes confused with Royal Sovereign, which, indeed, is one of its parents and this accounts for the general similarity of habit. It is, however, at least seven days earlier in ripening when growing under identical conditions and its youth gives it a robust health which years have robbed from its famous parent. The second named—Laxtonian—is the main crop market Strawberry *par excellence*, precisely as was Sir Joseph Paxton in the days of its growing youth and sturdy manhood. Laxtonian develops a bold truss, the individual fruits, varying from wedge to cone-shape, are large and they assume a brightness of crimson colour which does not become subdued until several hours after gathering, a point of great importance to market men. The flavour is very good and the texture wonderfully firm—it will stand handling, it will travel sound and retain its rich colour, and therefore it will reach its destination in a condition to command the market. Its most prolific season is that of Sir Joseph Paxton, but it ripens some fruits earlier and carries others later than that variety.

Other comparatively new Strawberries that are worth wide culture in private gardens and careful trials everywhere are:—The Duke, a very fine, early sort, which forces well; Sir Douglas Haig, early, a splendid forcer, exceptionally rich in flavour; International, mid-season, large and strikingly handsome; Bountiful, mid-season, fine flavour; very heavy cropper; Marshal Foch, main crop, handsome, rich flavour; Tit-Bit, main crop, not large, bright in colour, one of the finest in flavour; The Admiral, main crop, heavy yielder, particularly fine quality; and Lord Beatty, main crop, reliable on practically all soils, light colour, good flavour.

Mr. Edward Laxton, junr., is a flavour tester of considerable experience, and for his own eating he favours Sir Douglas Haig, Tit-Bit, The Admiral, main crop, and an unlisted variety which is to be named. *Horace Wright.*

FRUIT REGISTER.

OLD ORANGE PEARMAN.

CAN anyone give me any information concerning this Apple or any likely synonyms? I cannot find it in any of the old lists of varieties. In appearance it is not unlike the Ribston Pippin, but it has greater keeping qualities; in flavour and texture it is excellent, and is worthy of propagation. As it has good keeping quality into the latest season, it is suggestive that it derived its name from what I have pointed out, viz., the character of keeping quality; and that it is in one of the old varieties going back to a date before Hogg introduced the false doctrine that a "Pearmain" was a conical or "pear-shaped" fruit. *H. E. Durham*

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Pyrethrum Powder.—Referring to the note under this heading on p. 314, it may be of interest to record a statement made by a friend who served in the R.A.M.C. in Russia, where Chinese labour was employed. Although to obtain alcohol or other intoxicants, or opium, was impossible, some of the Chinese were often in a condition resembling intoxication. Although the manner of using the drug obtained was not definitely known, it was traced to insect powder, which was very plentiful in the camp, and from which the men in some way produced a preparation having similar effect to absinth. Probably some of your readers may know more about it. Another incident in my experience was the case of a lady who was attended by a medical man for a malady which he could not diagnose satisfactorily. The face was swollen, eyes inflamed and head ached. It occurred to the doctor to ask her what she was doing before her illness, and he ascertained that she had been picking off the flowers of the Golden Feather, *Pyrethrum* (*Chrysanthemum*) *Parthenium*, a row of which was planted in the Ribbon border to form a yellow line, and for which purpose the flowers were cropped. In a few days the patient got well again, and to test the case the doctor told her she might finish her task in the garden. She did so, and a return of the former malady was the result. That was over forty years ago, and since that I have had proof both with the plant and also the insect powder prepared from it, that it badly affects certain people. *James O'Brien.*

Isatis glauca.—The interesting note by W. I. which accompanies the illustration of *Isatis tinctoria* in *The Gardeners' Chronicle* of June 19, refers also to *I. glauca*, an excellent border plant still said in some catalogues to be "new," although it has been in cultivation for a few years now. I was among the first in this country to flower it, from seeds sent me by Mr. Edward Whittall, of Smyrna. In a small state a plant has not much appearance, but my first plant—only one came from the seeds I had—was seen and admired in my garden by Mr. Joseph Mallender, who was then at Hodsock Priory. Mr. Mallender obtained a plant from me, and I understand he distributed it with my sanction, which he asked before doing so. I do not remember the year, but it was before I came to my present home, which is more than 15 years ago. Individually, the flowers are small, but when a plant is three or four feet across and well in flower the mass of airy-looking, yellow blooms above the glaucous foliage is quite pleasing. I found no difficulty in growing the plant in sandy loam, and it is rather pleasant to me to see that it has become a favourite with many lovers of good, hardy border plants. *S. Arnott.*

A Public Rosary.—Those who happen to be in the Southend district in the near future should visit the delightful Rose garden in the public park at Westcliff. This park, known as Chalkwell Park, is easily reached by tram from all parts of the borough. The Rose garden overlooks the Thames estuary and faces south. The plants, on the occasion of my visit, were flowering splendidly, and a long hedge of William Allan Richardson, with tall pillar varieties in front, formed a glorious feature. The finest rambler was American Pillar, which was trained over a tall trellis, in the centre of the garden. The beds are filled with a wide range of varieties and the plants are doing splendidly. The pruning has been very severe, but this has only resulted in extra strong shoots and blooms. The exquisite dwarf polyantha varieties are used as edging to some of the beds, and such charming varieties as Mrs. Cutbush, Jessie, Eugenie Lamesch, Fabvier, and Maman Levassieur are flowering in profusion. *Visitor.*

Leaf Curl on Peach Trees.—I learn from gardeners in different parts of the country that leaf-curl is very prevalent, and it is very

bad in this district. Peach trees here, intended to be transferred later to a new Peach house, which was only completed six weeks ago, have been in the open for two years, kept well trained on temporary trellis work, and have made vigorous wood. This spring they were badly attacked by leaf curl, which I attribute to the severe cold gales, which, no doubt, are impregnated with salt from the river Humber. In Thomson's *Gardener's Assistant* the malady is put down to cold. We have removed all affected leaves, given the roots a stimulant of manure, and well stirred the ground. The trees have been syringed with common soft soap, and now they are making splendid young wood. I advise growers not to despair and talk of destroying their young trees if they are robust. It is strange I never heard of the curl in Scotland, cold as it is there. Perhaps some of your readers might have some advice to offer on the subject. *Grimsby.*

Aristolochia elegans.—Many of the *Aristolochias* require a large structure in which to grow and flower them well, but this species will

struck from cuttings, and plants obtained in this way will flower freely in pots five inches in diameter if trained around three or four sticks. A native of Brazil, this *Aristolochia* was introduced by the late Mr. William Bull, of Chelsea, who distributed it in 1886. From its beauty and freedom of flowering, it soon became popular, but I have not met with it frequently of late years. *Florist.*

Potato Spraying.—With the present change to wet weather, outbreaks of late blight may be expected at any time. In view of the food shortage, growers would be well advised to spray their Potato crops as a precaution, for whilst some contend that spraying does harm, the opinion of the majority of growers is in favour of spraying. It will, perhaps, be more convenient, in view of the shortage of labour in most establishments, to use a dry powder specific, such as "Blighty." Because the crops last season were relatively free from disease, some may be careless this season and neglect to spray. But we may not have another "disease free" season again for some years. *W. T.*



FIG. 14.—ROSE CAPT. KILBEE STUART.
N.R.S. Certificate of Merit. July 1 (See p. 24.)

bloom freely in a comparatively small state. It also possesses a further great advantage over some of the others, namely, the blossoms are without the unpleasant odour which forms a feature of a few of them. Of free, yet by no means rampant growth, *Aristolochia elegans* forms a very desirable climber for an intermediate house or stove. It is seen to the best advantage in not too lofty a structure, as the flowers are so delicately marked that inspection is necessary in order to reveal their charms. The leaves are somewhat heart-shaped and of a distinct glaucous green tint. Borne for a considerable period during the summer months, the flowers are, like most of the *Aristolochias*, of a peculiar shape, the tube, which is short, being abruptly bent, and the upper part dilated into an open, cup-shaped flower, about four inches across. The colour is a deep purple, ornamented throughout with irregular-branched markings of a creamy-white tint, while the centre is yellowish, surrounded by a band of rich, velvety purple. This *Aristolochia* may be readily

Propagating Strawberries (see p. 316).—Your correspondent's timely advice on the propagation of Strawberries prompts the following remarks, and may be of help to those who are handicapped by want of labour. The following method has been practised by me for several years in preference to layering in pots. Prepare a bed in a cool, somewhat shady position, by sifting sufficient spent potting soil to cover the space 4 inches deep, or thoroughly worked good garden soil will answer the purpose quite as well. Make the soil firm, and water it thoroughly. Instead of leaving the runner on the parent plant until it is rooted, select young plantlets from stools which are vigorous, healthy and fruitful, cut off the plantlets with about one inch of the sarmentum, and dibble them in lines about four inches apart in the place prepared for making the new plantation. I have found this method better than layering in pots, as the work of planting is sometimes delayed by unfavourable weather, and the pot plants may become starved. *J. E.*

SOCIETIES.

NATIONAL ROSE.

JULY 1.—The weather was unkind on July 1, when the N.R.S. held its Metropolitan exhibition in the gardens of the Royal Botanic Society, Regent's Park. However, there are compensations, and no one had cause to grumble about the oppressive heat within the tents. Nor did the showery weather appear to keep many visitors away. Princess Victoria made an early inspection of the show, and Princess Louise came later in the day. All through the day rosarians waited their turn in a long queue to enter the tent devoted to new seedling Roses, giving ample evidence of the keen interest taken in the national flower.

The exhibition was a large one, and the majority of the classes were well filled, but the quality of the blooms shown in boxes was considerably below first class. Among the new Roses there was none of outstanding distinction; two Gold Medals and eleven Certificates of Merit were granted.

NEW ROSES.

GOLD MEDALS.

Mrs. John R. Allan.—A full-sized H.T. variety, apparently of vigorous habit and constitution. The colour is bright pink. This Rose will doubtless commend itself to exhibitors because of its size and substance, but it appeared to have considerable similarity to several other sorts. Shown by Messrs. HUGH DICKSON, LTD.

Princess Victoria (see Fig. 13).—This is another large-petalled H.T. Rose of exhibition size and form. The colour is rich salmon-cerise, with a golden glow at the base of each petal. Shown by Messrs. S. MCGREY AND SON, Portadown.

CERTIFICATES OF MERIT.

Lady Inchiquin.—A lovely H.T. Rose, said to be of vigorous growth and valuable for exhibition or for bedding. The blooms are of good size, broad-petalled, shapely and slightly fragrant. The colour is an exquisite shade of rose-pink, suffused with glowing cerise. Shown by Messrs. ALEX. DICKSON AND SONS, Newtownards.

Capt. Kilbee Stuart (see Fig. 14).—A gorgeously-coloured fragrant H.T. Rose that promises to be of great value for exhibition purposes. The petals are of wonderful size and make up a big, substantial bloom. The colour is clear and rich velvety scarlet, intense and effective; altogether a very handsome Rose. Shown by Messrs. ALEX. DICKSON AND SONS.

Betty Uppichard.—A rather small-flowered Rose, but nevertheless a strikingly beautiful H.T. variety. The broad, rounded petals recurve a little as the blooms open. The buds are of lovely shape and rich orange-salmon hue; the open flowers are soft pink, flushed with orange, and with a deep orange-salmon centre. This variety should make a fine bedding Rose, as the foliage as well as the flowers is good. Shown by Messrs. ALEX. DICKSON AND SONS.

Lady Maureen Stuart.—A neatly-shaped and compact blooming H.T. variety. It appears to be capable of producing blooms of full exhibition size, but is a trifle short in the petal. The colour is vivid cherry-red, almost scarlet; foliage dark and clean; blooms deliciously fragrant. Shown by Messrs. ALEX. DICKSON AND SONS.

J. G. Glassford.—This large H.T. variety has full-sized exhibition blooms of splendid shape. It is sweetly scented, and the colour is clear, soft, bright, rose-red, but in a newly opened flower the shade is almost light scarlet. Shown by Messrs. HUGH DICKSON, LTD., Belfast.

Marjorie Bulkeley.—A really big Rose of a size, shape and substance that should satisfy the most exacting exhibitor. The colour is variable, and in a fully expanded bloom it is clear pale-flesh pink, but in some newly-opened flowers there is a pale creamy-yellow sunset shading which is very beautiful. Shown by Messrs. HUGH DICKSON, LTD.

Koster's Orleans.—A brilliant Polyantha variety of dwarf habit and fine for bedding.

The small semi-double flowers are produced in erect clusters of from twelve to twenty-four. The colour is a rich shade of pink, almost scarlet. A finer variety than Orleans as shown. Raised by Messrs. Koster and Co., and shown by Mr. WALTER EASLEA.

Mabel Morse.—A very showy H.T. Rose with firm, glossy foliage and fair-sized blooms of rich golden-yellow colour. Shown by Messrs. S. MCGREY AND SON, Portadown, Ireland.

Vanity.—This showy variety has flowers three inches in diameter, and of a bright rose-pink shade, with a small central cluster of pale-yellow stamens. Many flowers are quite single, but the majority have three or four extra petals that lay out flatly. The growth of this Hybrid Musk variety is very robust, and the branching clusters of blooms are of large size, but very elegant. Raised and shown by the Rev. J. H. PEMBERTON, Havering, Romford.

Among the new Roses which failed to obtain recognition from the judges we liked Ariel, shown by Messrs. BEES, LTD., Liverpool. This lovely H.T. variety promises to be a first-class garden Rose, and one of considerable value for floral decorations. The buds are yellow with a little bronzy-red shading. The open flowers are light yellow with pink tinting. Shown by Messrs. BEES, LTD., Liverpool.

NURSDRYMEN'S CLASSES.

BLOOMS SHOWN ON BOARDS.

The champion class called for 72 blooms, distinct. The first prize was a trophy together with £4 in money. Three competed and the premier award was won by Messrs. D. PRIOR AND SON, Colchester, whose exhibit was good, but not of outstanding quality. The finest blooms were of the varieties Florence Forrester, George Dickson, Augustus Hartmann, Mrs. Geo. Shawyer, Nellie Parker, Mildred Grant, Gloire de Chédane-Guinoisseau, Mrs. George Marriott, Maman Cochet, Mrs. Elisha Hicks, Earl of Gosford, Lemon Queen and Lobengrin; 2nd, Messrs. B. R. CANT AND SONS, Colchester, for smaller blooms of such varieties as H. P. Pinkerton, Mrs. Geo. Norwood, Mrs. Foley Hobbs, Sovereign a new H. Pernetiana variety of Orange-buff colouring; Covent Garden, W. C. Clark and Ophelia; 3rd, Messrs. FRANK CANT AND CO., Colchester.

In the important class for 32 distinct varieties, three blooms of each sort, Messrs. D. PRIOR AND SON were again successful in obtaining the premier award. Size of bloom told again, the flowers throughout being of large size. Notable varieties were Mrs. Wallace Rowe, White Maman Cochet, Florence Forrester, Mrs. Charles Russell, George Dickson, Mrs. Franklin Dennison and Augustus Hartmann; Messrs. B. R. CANT AND SONS, who followed, had bright, fresh blooms of Geo. Dickson, Augustus Hartmann, Mrs. Bertram Walker, Commandeur Felix Faure, and Mrs. Foley Hobbs; 3rd, Messrs. F. CANT AND CO.

There was a good competition in the class for 48 blooms, distinct, amongst three contestants. Mr. HUGH DICKSON, Belfast, showed best and won the 1st prize with good blooms of such sorts as E. Goderey Brown, Mrs. J. R. Allan, J. R. Glassford, Avoca, Marchioness of Ormonde, Mrs. Geo. Shawyer, Miss Willmott, David Gilmore Mildred Grant, and Sir James Craig, the darker varieties being the best; 2nd, Mr. G. BURCH, Peterborough, whose best blooms were of the varieties Mrs. J. Welch, Geo. Dickson, Mrs. Dudley Cross, and Mrs. Geo. Norwood; 3rd, Mr. G. LONGLEY, Rainham, Kent.

Mr. BURCH was the only exhibitor in the class for 16 distinct varieties showing triplets, and was awarded the 1st prize; his flowers of Mrs. J. Welch, Florence Forrester, and the rich scarlet H. V. Machin were of good exhibition standard.

Messrs. CHAPLIN BROS., Waltham Cross, carried off chief honours in the class for 24 blooms, distinct, in which Messrs. JARMAN AND CO., Chaw, were 2nd, and Mr. GEO. PRINCE, Oxford, 3rd.

Messrs. JARMAN AND CO. had the better of two exhibits in the class for 8 varieties, distinct, shown in triplet in which Mr. H. DREW, Longworth, was 2nd.

Mr. GEORGE PRINCE won the 1st prize easily

in the class for 18 blooms of Tea and Noisette varieties, and thus secured the D'Ombrian Challenge Cup offered in this section. This exhibit was very good, still, many of the outer petals were defective from weather injury. Some of the flowers, however, such as those of Mrs. Campbell Hall, Lady Plymouth, White Maman Cochet, A. H. Gray and Souvenir de Pierre Notting were of good exhibition quality. Messrs. D. PRIOR AND SON and Mr. H. DREW were adjudged equal 2nd. Messrs. D. PRIOR AND SON's flowers were on the small size. Innocente Pirola, Mrs. Ed. Mawley, Mrs. Herbert Stevens, White Maman Cochet and Mrs. Foley Hobbs are a few of their best blooms. Mr. H. DREW had rather larger flowers, some, such as White Maman Cochet, Mrs. Campbell Hall and Mrs. Foley Hobbs, being of very commendable quality.

An interesting class was that for 12 blooms of new Roses distributed since January 1, 1916. Messrs. ALEX. DICKSON AND SONS, Newtownards, were placed 1st for such fine varieties as Capt. F. Bald, Kootenay, Lady Anderson, Gladys Holland, Lady Maureen Stewart, Miss Connor, Mrs. Fred Searle and Colonel Oswald Fitzgerald; 2nd, Mr. HUGH DICKSON, with E. Godfrey Brown, Flame of Fire, Mrs. John R. Allan, T. F. Crozier, Miss Willmott and others; 3rd, Mr. ELISHA J. HICKS, Twyford. Mr. ELISHA HICKS had the best 12 blooms of any new Rose distributed since 1916, in his pale-pink fragrant variety, Mrs. Elisha Hicks; 2nd, Mr. GEO. PRINCE, with Mrs. George Marriott; 3rd, Mr. HUGH DICKSON, with T. F. Crozier.

BASKETS OF ROSES.

Messrs. D. PRIOR AND SONS had the finest basket of 14 blooms of a H.P. variety, showing superb specimens of the white Frau Karl Druschki.

The same firm excelled in the similar class for a H.T. variety with splendid flowers, beautifully arranged, of the pink Mrs. G. Norwood; 2nd, Mr. H. DREW, with the variety Mrs. C. Russell.

The class for 7 baskets of cut Roses, of 7 distinct varieties, not more than 36 stems in each sort, was exceptionally fine. The premier award was made in favour of Messrs. CHAPLIN BROS., who showed choice blooms of Ophelia, Red Letter Day, Mme. Melanie Soupert, Isobel, Margaret D. Hamill, C. K. Douglas, and Mrs. Wymms Quin; 2nd, Messrs. A. DICKSON AND SONS, who had very neatly arranged baskets of Red Letter Day, Lyon-Rose, Mrs. A. Tate and others; 3rd, Mr. HUGH DICKSON, whose basket of Irish Elegance was exceptionally good.

Mr. JOHN MATTOCK excelled in the class for 3 baskets, showing Mrs. H. Stevens, Irish Elegance and Margaret D. Hamill. Mr. G. BURCH showed the best basket of a Tea or Noisette variety, with superb blooms of Mrs. Foley Hobbs; 2nd, Messrs. D. PRIOR AND SONS, with White Maman Cochet.

DECORATIVE ROSES.

The A. C. Turner Challenge Cup was offered for the best exhibit of 36 varieties of decorative Roses. It was won by Mr. JOHN MATTOCK with a very effective group, staged on tiers covered with black velvet; the varieties Isobel, Pav. Lady Hillington, Irish Elegance and Mrs. Aaron Ward were exceptionally fine; 2nd Messrs. F. CANT AND CO.; 3rd Mr. H. STREET, Bisley.

Five competed in the class for 18 varieties, distinct, arranged in a space of 7 feet by 3 feet. This was a good competition, in which Mr. FRANK SPOONER, Horsell, Woking, excelled with a very pretty group of fresh, bright flowers, neatly arranged; 2nd, Mr. G. LILLEY, Yewsey.

Mr. JOHN MATTOCK had the field to himself in the class for 12 dwarf Polyantha varieties arranged on a space of 6 feet by 3 feet. He was deservedly awarded the 1st prize for good bunches of Mrs. Cutbush, Aschenbrodel, Orleans Rose, Ellen Poulson, Marie Pavie and others.

GROUPS OF ROSES.

Only one exhibit was forthcoming in the class for a representative group of cut Roses placed on a low staging, in a space of 200 square feet. The exhibitor was Mr. ELISHA HICKS, who deservedly won the Mawley Memorial Medal for

a fine display, in which the varieties Joanna Bridge, Queen of the Belgians, Margaret Dickson Hamill, Ophelia, Pax and Chas. E. Shea figured prominently.

Three contested the class for a representative group of cut Roses on staging occupying 50 feet by 4 feet. Messrs. B. R. CANT AND CO. had the best display, and Messrs. G. JACKMAN AND SON were 2nd. Messrs. CANT AND CO. utilised tall epergnes filled with rambler varieties at the back, with shorter receptacles and baskets in the foreground. There was a wide selection of notable varieties, amongst them Dorothy Page Roberts, Mrs. Alfred Tate and Padre, a new H.T. variety, the loose bloom being of brilliant colouring, almost scarlet, with a rosy sheen. 2nd, Messrs. G. JACKMAN AND SON, Woking, for a very effective group in which Rayon d'Or, Lady Ashtown and Mme. Melaine Soupert figured conspicuously; 3rd, Rev. J. H. PEMBERTON, who showed his many fine novelties.

Six competed in the smaller class for a group occupying a space of 10 feet by 4 feet, resulting in a good display and a keen competition. Messrs. CHAPPLIN BROS., Hitchin, excelled with a fine group, notable alike for quality and effective arrangement. The 2nd and 3rd prizes were won by Messrs. JARMAN AND CO. and Messrs. BEES, LTD., respectively.

AMATEURS' CLASSES.

The principal class in the amateurs' section for cut blooms was that for 36 blooms, distinct. Three competed, and Dr. LAMPLUGH, Alverstoke, had a very meritorious win with flowers of fine colouring, good form and large size. There was a magnificent specimen of Geo. Dickson, and others exceptionally fine were Candeur Lyonnaise, Mabel Drew, William Shean, St. Helena, Alice Lindsell, Florence Forrester, Avoca, St. Helena and Gloire de Chédane-Guinoisseau; 2nd, Mr. F. DENNISON, Leamington, with paler varieties, Mrs. Foley Hobbs, Mabel Drew, Mrs. Geo. Sawyer and Mrs. Myles Kennedy being outstandingly good; 3rd, Mr. H. L. WETTERN, Oxted.

The smaller class for 24 blooms, distinct, was contested by two growers, and the 1st prize was made in favour of Mr. F. DENNISON, Leamington; 2nd, Mr. H. L. WETTERN. The blooms in both exhibits were much weather-stained on the outer petals; in both cases they were of large size.

For 8 distinct varieties in triplets, Mr. DENNISON was again successful, beating two competitors, of whom Mr. SPEIGHT, Market Harborough, and Mr. B. FORTESCUE, Maidenhead, were 2nd and 3rd respectively. "Weight" told in favour of Mr. Dennison, and his flowers of Avoca and Mabel Drew were of a high standard generally. Mr. Speight had very clear flowers, less weather-marked than in most cases.

Mr. JOHN HART, Potters Bar, staged excellent blooms in the class for 18 blooms, distinct open to growers of fewer than 1,000 plants, in which three others competed. The 2nd prize was awarded to Mr. G. C. SAWDAY, Weybridge; 3rd, Rev. BURNSIDE, Rochford.

The Rev. BURNSIDE had the better of two exhibits in the class for 6 varieties shown in triplets. The pale yellow W. R. Smith was shown splendidly.

Mr. R. DE V. PRYOR, Hitchin, showed the better of two exhibits in the class for 12 blooms, distinct, open to growers of fewer than 750 plants.

In the class for 24 blooms, distinct, open to those who grow their Roses without assistance, Dr. C. LAMPLUGH showed splendid blooms of Mrs. Foley Hobbs, Mrs. C. Lamplough, Geo. Dickson, Mrs. F. Dennison, Mildred Grant, Mrs. E. Hicks, and Florence Forrester; 2nd, Mr. GULLIVER-SPEIGHT; 3rd, Mr. G. C. SAWDAY.

For 12 blooms, distinct, Mr. W. SENDERLAND, Driffield, Yorks., excelled, and Dr. PANCRIDGE was 2nd with blooms of extra large size. Mr. SENDERLAND's best specimens were Mabel Drew and Mrs. Andrew Carnegie.

In the smaller class for 9 blooms, distinct,

Mr. W. G. MOORE, High Wycombe, had fine back-row blooms of Geo. Dickson, Mrs. J. Welch and Mildred Grant, in his winning exhibit. There were five competitors, and all showed well; Mr. W. G. MOORE, High Wycombe, was awarded the 2nd prize, and Mr. A. R. REEVES, Gosport, the 3rd prize.

In a class open to growers of fewer than 200 plants, for six blooms, distinct, there was a spirited competition amongst four. Dr. PANCRIDGE was adjudged the premier winner with Geo. Dickson, Mabel Drew and Mrs. A. E. Coxhead as his best varieties; 2nd, Mr. A. R. REEVES, who had fine flowers of Mabel Drew and Mrs. Cornwallis West.

The Challenge Cup offered for 12 blooms, distinct, of Tea and Noisette varieties, was won by Dr. LAMPLUGH, with fresh, bright blooms of Molly S. Crawford, Mrs. Ed. Mawley, Mrs. Foley Hobbs and White Maman Cochet.

DECORATIVE ROSES.

The classes for decorative Roses displayed in baskets proved exceptionally good, and contributed a pleasing feature to the show. The 1st prize for 3 baskets of 3 distinct varieties was won by Mr. GEO. MARriott, Netherfield, Notts, with Lady Greenhall, Château de Clos Vougeot, and Mme. Jules Bouche; 2nd, Mr. H. L. WETTERN.

For 2 baskets in 2 varieties, Mr. JOHN HART, Potters Bar, was placed 1st with the varieties Mme. L. Payne and Irish Elegance.

For a basket of one or more varieties, Mrs. STAFFORD CHARLES, Stanmore, was successful with a beautiful basket of Pharisæer.

A piece of plate was offered as the 1st prize in a class for a representative group of Roses arranged on a space of 5 feet by 3 feet. It was worthily won by Mr. GEORGE MARriott with a magnificent group of choice blooms, beautifully staged in epergnes and baskets. The colour arrangement was fine. Mr. H. R. DARLINGTON was awarded 2nd prize.

ARTISTIC CLASSES.

Floral decorations invariably attract a great deal of attention, and on this occasion the exhibits in the various classes were greatly admired.

Mrs. G. DAVIES won the 1st prize for a dinner-table decoration with Irish Emblem Roses. Mrs. OAKLEY FISHER won 2nd place with a pleasing design of yellow blooms, and Miss M. GRIFFITH came 3rd. In another and similar class the prizes were won by Mrs. COLSTON HALL, Mrs. O. FISHER, and Mrs. H. BARTON. Mrs. COURTNEY PAGE had the best bowl of Roses, and showed Irish Elegance in a delightful manner; Mr. C. GIDDENS 2nd with Ophelia. Mrs. A. ROBINSON and Mrs. GIDDENS were 1st and 2nd respectively in another bowl class, the former showing Mme. Abel Chatenay and the latter Ophelia. Mr. COLSTON HALL showed the best vase of Roses—Ophelia, and Miss CHARLTON came 2nd with Mme. Abel Chatenay. In the lady amateurs' bowl class Miss E. GRIFFITHS was 1st, and Mrs. COURTNEY PAGE 2nd.

In the nurserymen's class for a bowl of Roses Mr. ELISHA HICKS was first with Joanna Bridge, and Messrs. F. CANT AND CO., 2nd.

BEST BLOOMS.

Silver medals were offered for the best individual blooms in the exhibition, and they were awarded as follows: Nurserymen—Mrs. Campbell Hall, from Mr. G. Prince; Florence Forrester, from Messrs. Prior and Son; and Gloire de Chédane-Guinoisseau from the same firm. Amateurs—Mrs. Foley Hobbs, from Mr. Slaughter; Mabel Drew and Snow Queen, from Dr. Lamplough.

NON-COMPETITIVE.

Several interesting non-competitive displays were made in the glass corridor, and these included Carnations and Roses from Messrs. STUART LOW AND CO.; fine Sweet Peas from Messrs. DORRIS AND CO.; Carnations and Dianthus from Messrs. ALLWOOD BROTHERS; Delphiniums from Messrs. R. H. BATH; Violas in great variety from Messrs. CARTER PAGE AND CO.; and Alpine plants from the Misses HOKINS.

ROYAL AGRICULTURAL.

JUNE 29 AND 30, JULY 1 AND 2.—The Horticultural Section of the "Royal" exhibition at Darlington was opened on the first-mentioned day under somewhat threatening conditions, but in the afternoon more favourable weather conditions prevailed and there was a large attendance of visitors. The horticultural exhibits were well up to the average of quality, the competitive exhibits of herbaceous plants and flowers being a special feature. Carnations and Sweet Peas were also well represented.

Messrs. SUTTON AND SONS had an extensive group very tastefully arranged. The whole of the back was decorated with Sweet Peas in variety and Liliums, and at the base there were choice plants of tuberous Begonias and Gloxinias. In front of these were arranged fruits and vegetables (Large Gold Medal). Messrs. ALLWOOD BROS. showed a grand collection of Tree Carnations and the Allwoodii section of Hybrid Pinks. One of the most distinct among the latter was a variety named Rufus. The novelties among Carnations included Edward Allwood, its scarlet flowers affording striking contrast to those of Wivelsfield Apricot and the rich purple of Wavelsfield Claret. The flowers in all varieties were fine in substance, clean and very tastefully arranged. (Gold Medal.)

Messrs. ALEX. DICKSON AND SONS put up a fine exhibit of Sweet Peas and Roses. The most prominent varieties of Roses were Lady Inchiquin, Sunstar, Margaret D. Hamill, Ethel Somerset, Mrs. Herbert Stephens and Elizabeth Cullen. (Gold Medal.) Messrs. STUART LOW AND CO. had a very fine group of Orchids and Carnations. Among the Orchids were several plants of Cattleya and its hybrids, C. Mendelii in variety, C. Gaskelliana alba, several forms of Laelia-Cattleya Luminosa aurea, Renanthera Imsehootiana and Odontodas in variety. (Gold Medal.)

Messrs. LAXTON BROS. showed a grand collection of their newer Strawberries, one of the most attractive being the variety Laxtonian, with berries of fine form, rich in colour and substance. King George, International and Marshal Foch were also very finely represented (Gold Medal.) Messrs. BROADHEAD AND SONS exhibited a miniature rockery, very neatly arranged and planted with various Dianthus, Sedums, small Campanulas and Arenarias, and with a background of flowering and evergreen shrubs (Silver Medal.)

Messrs. J. FORBES, LTD., showed Phloxes and Violas in great variety, numerous Irises, and fine spikes of Pentstemons and Delphiniums. (Silver-gilt Medal.) Mr. HORACE LAKEMAN's display of Border Carnations was greatly admired, and he thoroughly deserved the Gold Medal awarded. Messrs. C. H. TATDEVIN filled a table with Carnations, Pinks and various herbaceous plants all attractively arranged. Mr. H. N. ELLISON showed greenhouse Ferns, Palms and Selaginellas. (Silver Medal.) Messrs. TOOGOOD AND SONS staged an admirable collection of early vegetables, which were very tastefully arranged. The White Mammoth Onions, Selected Black Beetroot and New Scarlet Intermediate Carrot were worthy of special note. (Gold Medal.)

Messrs. W. LAWRENSON, LTD., showed Carnations, the blooms being very well staged and the colour blending tastefully carried out. The same exhibitors had a notable collection of hardy flowers, and their exhibit was awarded the First Prize in Class 6.

Messrs. MACK AND MILN, Darlington, showed an extensive exhibit of the new bedding Pelargonium Victory. (Silver Medal.) GARDEN SUPPLIES, LTD., displayed Sweet Peas, and were awarded a Silver Medal. Mr. W. EDWARDS was awarded a Silver Medal for table decorations. Mr. C. ENGELMANN, Saffron Waldon, had a beautiful exhibit of hybrid Gladioli in variety, and Carnations. (Silver-gilt Medal.) Messrs. WATERER, SONS AND CRISP arranged a splendid exhibit of Rhododendrons including several unnamed and attractive kinds. They also had a fine collection of clipped and ornamental trees and shrubs. (Large Gold Medal.)

Messrs. KENT AND BRYDON arranged a collec-

tion of Delphiniums in variety and interesting garden designs in the tent, while in the show grounds they displayed an extensive rock garden and water garden, in which were numerous Nymphaeas in flower. A sunk Italian garden, with a fine bed of Iris in the centre, led to the rock garden. (Large Gold Medal.)

Messrs. J. CYPHER AND SONS won the 1st prize in the class for a group of miscellaneous Plants arranged for effect with a beautifully arranged display. The background consisted of tall Palms, Crotons and other foliage, and tall flowering plants, the ground-work being made up of Ferns and Asparagus. Raised among the lower subjects were light Oncidium in variety, Odontoglossums, Cattleyas, Odontiodas, Miltonia and Cypripediums. Mr. W. A. HOLMES, Chesterfield, second; Mr. H. H. HILLIER, Green Park, Darlington, third.

For a collection of Orchids, arranged for effect, Sir J. SCOTT, Bt., Danby Lodge, Darlington, was the only exhibitor and was awarded 1st prize. The group was very tastefully arranged, and included several very fine forms of Odontoglossum ardentissimum, O. Jasper, numerous good forms of Cattleyas, Laelio-Cattleyas, Brasso-Cattleyas, Odontiodas and Miltonias.

For a collection of Delphinium, Messrs. BLACKMORE AND LANGDON won the 1st prize with a fine display. The same firm was also first in the class for a table of tuberous-rooted Begonias. The flowers were of the usual good quality seen in exhibits from this firm. For a collection of hardy perennial and cut blooms, Messrs. HARKNESS AND SONS, Bedale, were first with a brilliant display, the fine Gaillardia Mrs. Mackellar being a special feature. The Delphiniums and Liliums were also of fine quality; Messrs. ARNTDALE AND SON, Sheffield, second; Messrs. GIBSON, Bedale, third.

For a collection of Sweet Peas arranged for effect, Messrs. E. W. KING AND CO. excelled with Hercules, Alex. Malcolm, Doris, Daisybird and Gladys in fine form; the basket arrangements in the foreground were very effective. Messrs. ALEX. DICKSON AND SON, Belfast, second. For a collection of Roses, Messrs. ALEX. DICKSON AND SONS were placed first. There were no entries in the vegetable classes.

CROYDON HORTICULTURAL.

JUNE 23.—The annual show of this society, which was held in the Park Hill Recreation Ground, will rank as the most successful that has been held at Croydon. The exhibits were of especially high quality and there was a very large attendance. There were fewer stove and greenhouse plants, but this was amply compensated for by the increased quantities of Roses, Sweet Peas and vegetables, all of which were particularly good. The arrangements reflected great credit on the Committee and energetic Secretary.

OPEN ROSE CLASSES.

The Lady Erldge Challenge Cup was again won by Messrs. PRIOR AND SON, who staged 48 splendid blooms. Mrs. George Norwood was selected by the judges as being the best bloom in the show. Other varieties of great merit were J. B. Clarke, Claudius, Mrs. J. H. Welch, Mrs. Amy Hammond and Florence Pemberton. Messrs. B. R. CANT AND SONS, who followed closely, included beautiful blooms of Golden Emblem, Mrs. A. Riccardo, Lady Barham, Dean Hole and Lyon Rose.

Mr. J. F. JEFFRIES was awarded the 1st prize in the class for 24 Roses with Mrs. Wallace, J. L. Mock, Yvonne Vacherot, F. Forrester, and other notable varieties.

Competition was strong in the class for 18 varieties, 3 blooms of each, and the winning collection of Messrs. D. PRIOR AND SON, was particularly good. The very best blooms were Mrs. J. H. Welch, Mildred Grant, Mrs. J. Laing and Mme. Jules Gravereaux. Mr. E. HICKS was awarded the 2nd prize with such varieties as Modesty, Mrs. George Norwood and Nellie Parker.

Snow Queen, as shown by Messrs. D. PRIOR AND SON, was the winning variety in the class for 12 blooms of any H. P. or H. T. Rose, and the same variety shown by Messrs. B. R. CANT was the second

best. Messrs. D. PRIOR AND SON also won the 1st prize in the class for 18 T. or Noisette Roses, showing fine blooms of Mme. J. Gravereaux, Mrs. Foley Hobbs and Mrs. A. Kennedy. Mr. E. HICKS was placed 2nd and his best blooms were Mrs. Edward Mawley and Mrs. H. Stevens.

In the class for 9 new Roses Mr. HICKS was the only exhibitor; he showed Covent Garden, Gladys Holland, Mrs. E. J. Hicks and Modesty. Showing May Marriott, Mrs. Freda Hunter and Queen of the Belgians, Mr. HICKS was placed first in the class for 4 bunches of new decorative Roses, and he was also the most successful exhibitor of 12 bunches of garden Roses and 5 baskets of cut Roses.

AMATEURS' CLASSES.

Mr. H. L. WETTERN again won the Croydon Amateurs' Cup, which is offered for the best 24 Roses distinct, with a splendid collection of such sorts as Coronation, Lady Ashtown, Gladys Harkness, Mrs. G. Marriott and J. B. Clark. Dr. C. LAMPLUGH, who was placed second, showed fine blooms of St. Helena, Mrs. C. West, Coronation, J. L. Alcock and Mildred Grant.

Dr. LAMPLUGH was awarded the 1st prizes for (a) 8 trebles, (b) 6 T. or N. Roses, and (c) 18 T. or N. Roses, with highly creditable blooms.

Mr. H. L. WETTERN, besides winning the Championship class, was first for (a) 6 bunches of Perpetual flowering and Decorative Roses, (b) 5 vases of Decorative Roses, (c) 4 bunches of New Roses; and (a) one basket of cut Roses. His blooms of Paul's Scarlet Climber, Lady Hillingdon and Jacques Vincent evoked great admiration.

In the Local Classes, Mr. L. H. SNOW won the Challenge Cup and he also had the best six Roses of any one variety.

The N.R.S. medal offered for (a) the best H.P. or H.T. Rose in the Amateurs' Classes was won by Mr. C. W. EDWARDS with Mabel Drew, (b) for the best T. or N. Rose by Mr. L. P. ROBERTS with Mme. Jules Gravereaux, (c) the best Rose in the Local Classes by Mr. N. G. JONES with Mme. Jules Gravereaux.

The best Dinner Table Decoration of Roses was a tasteful arrangement of Irish Elegance, by Mrs. H. L. WETTERN, and in the similar class for Sweet Peas, Miss H. PEARSON was placed first for a very graceful design.

Sweet Peas were excellent in the Amateurs' Classes, but there were no exhibits by nurserymen. F. W. FRANKS, Esq. (gr., Mr. W. Humphreys), Loampits, Tonbridge, won the Gold Medal and first prize with 12 magnificent bunches. His vases of Hawlmark Pink, Mrs. T. Jones, R. F. Felton, Hercules Beryl and Royal Purple, were of great excellence. This exhibitor won the 1st prizes for 6 bunches and a vase of Sweet Peas respectively, with equally high-class blooms.

FRUITS AND VEGETABLES.

The very many classes contained much excellent produce and were the objects of a deal of envious admiration by the large numbers of visitors. Sir B. GREENWALL (gr., Mr. W. Lintott), Marden Park, was a very successful exhibitor. His chief first prizes were for (a) 3 bunches of white Grapes, (b) 3 bunches of black Grapes, (c) a collection of excellent vegetables.

A splendid collection of vegetables was shown by G. SHERRERS, Esq. (gr., Mr. G. F. Barnes), Kendra Hall, in the open class, and this exhibitor also had the best collection in the Local Classes.

In the single dish classes Tomatoes, Peas, Broad Beans, Cauliflowers, Cabbages, Beets and Celery were of especially high quality.

NON-COMPETITIVE EXHIBITS.

These were very numerous and of great merit. Mr. E. HICKS showed beautiful Roses (Gold Medal). Mr. W. WELLS, JUNR., arranged splendid spikes of Delphiniums (Gold Medal). Messrs. S. BIDE AND SON exhibited a large collection of Sweet Peas (Gold Medal). Mr. THOS. BUTCHER staged a group of miscellaneous plants (Silver Medal). Mr. E. MITCHELL contributed stove and greenhouse plants (Silver Medal) and Miss CAREY (gr., Mr. A. J. High), Kent House, Addiscombe sent an interesting collection of succulent plants and a small group of Cymbidium Lowianum var. (Silver Medal).

ROYAL HORTICULTURAL. Provincial Show at Cardiff.

JULY 6, 7 AND 8.—Many years have passed since the Royal Horticultural Society held a provincial show, and perchance many other years may pass before the post-war experiment, at Cardiff, is repeated. The weather conditions during the evening and night before the opening of the show were vile and not less so during the morning of July 6. During the greater part of the time our report was being made there was a superfluity of mud and water in the roadway, around the tents and inside the tents at Sophia Gardens, and in No. 2 tent, orange boxes served as insecure stepping stones across one side of a veritable lagoon, while table tops along the other side were traps to all but those who walked warily over them.

The exhibition was a good one and exhibitors are to be congratulated upon their efforts. The canvas of some of the tents was dark, but probably no one would have grumbled much at this, had the weather been brilliant and hot. We heard of a good deal of local complaints on the absence of music at the show, and of the high charge of 10s. for admission on the first day. Shrewsbury fete being held up as a model to be followed when next the R.H.S. journeys to the provinces. Most of the members of the Council and staff of the R.H.S. attended at Cardiff; the former judged the exhibits and the latter compiled the official list of awards in excellent time. Queen Victoria, of Portugal, opened the exhibition and presented the cups won by successful exhibitors.

ORCHIDS AND INDOOR PLANTS.

Sir JEREMIAH COLMAN (gr., Mr. J. Collier), Gatton Park, Reigate, sent a group of Orchids and thoroughly maintained his reputation with an exhibit which included Cattleya gigas Mrs. E. Ashworth, Laelio-Cattleya Canhamiana alba, Oncidium Papilio, Odontoglossum Gatton Emperor, and Miltonia Charlesworthii. Mrs. J. A. NEALE (gr., Mr. Surrenden), Kenton, Exeter, contributed a most interesting group of Orchids and insectivorous plants. The latter included fine specimens of Drosera binata, and Sarracenia purpurea; the former, Thunia Marshalliana, a large example of Brassia verrucosa, Renanthera imschootiana and Oncidium Papilio.

Messrs. STUART LOW AND CO., Enfield, contributed a small group of Orchids wherein Renanthera imschootiana provided rich colouring, with Oncidium Papilio, Odontiodas, Odontoglossums, and a few Cattleyas in the foreground. Messrs. J. CYPHER AND SONS, Cheltenham, arranged well-grown plants in a beautiful group of the character which has charmed so many thousands of people at Shrewsbury and other great shows. Palms, Humea elegans, Francoa ramosa, Oncidiums, Odontoglossums, Cattleyas, Crotons, Dracaenas, and a host of other elegant subjects were associated in a most elegant and pleasing fashion.

Messrs. BLACKMORE AND LANGDON had a glorious exhibit of choice varieties of tuberous-rooted Begonias, superbly grown. The blooms of Mrs. W. Cuthbertson, Queen of the Belgians, Lady Carson, King Albert, and Mrs. J. S. Brunton, were of wonderful size and beauty. The same firm showed a collection of fine varieties of Delphiniums. TREVOR S. JONES, Esq., Frondeg, Radyr, near Cardiff, had a large group of Gloxinias; the plants were very finely grown and represented a first-rate strain.

A particularly fine lot of Hippeastrums from Sir GEORGE HOLFORD's collection, Westonbirt (gr., Mr. Chapman), was one of the features of the show. The form of the flowers was beyond criticism, the cultivation first class, and the variety of colouring splendid. Probably the most attractive varieties were the white ones—Nivea, Snowdrift, Thibse, Moon Child, Elsie, White Nnn, and Snow Martin; and the pink and rose sorts—Cameo, Mary Rose, Rose Cardinal, Zephyr and Pink Star. For so late in the year this was a remarkable exhibit—but it would have been a wonderful one at any time.

REGINALD CONY, Esq., Duffryn, Cardiff, showed an interesting collection of Cacti and other succulent plants—an unique collection now-a-days for a private garden. There were

numerous species of Euphorbia, Cotyledon, Opuntia, Rochea, Gasteria, Cereus, Aloe, Sedum Agave, Mammillaria, and Echinocactus—probably over a hundred species altogether.

Mr. L. R. RUSSELL, Richmond, grouped stove plants effectively and showed Codiaenm Golden Ring in good style, with Dracaenas, Caladiums and Alocasias. Ferns in great variety with Palms and Araucarias, were shown by Mr. H. N. ELLISON, West Bromwich. Mr. VINCENT SLADE, Taunton, produced a blaze of colour with a collection of varieties of Zonal pelargoniums, while Messrs. W. J. GODFREY AND SON showed regal Pelargoniums in pots.

Floral designs in great variety and beauty were contributed by Mr. W. TRESEDER, Cardiff; the cross of Mauve Statice and Cattleyas, with a base of white Lilies and pink Carnations was a striking design and the basket of Orchids was very beautiful.

ROSES.

Mr. ELISHA J. HICKS, Twyford, showed a beautiful lot of Roses and made up a very fine exhibit with pillars of Minnehaha, Ethel, Coronation, Lady Godiva, American Pillar, Lady Gay, Flame and Excelsa, with stands of K. of K., Irish Elegance, Margaret Dickson Hamill, Joanna Bridge, Ophelia, Mrs. Curmuck Sawday, and Isobel between. Messrs. STEPHEN TRESEDER AND SON, Cardiff, showed floral designs and a collection of Roses, set up in columns of leading varieties. Messrs. W. TRESEDER, LTD., were also exhibitors of Roses.

Roses in fine form and colour, and very fresh and beautiful were shown by Messrs. B. R. CANT AND SONS, Colchester, who displayed Lyon Rose, British Queen, Isobel, Dorothy Page Roberts, Lady Pirrie, and the new Padre, a garden H. T. variety, of orange-pink colouring. Messrs. JARMAN AND CO., Chard, exhibited a large collection of garden Roses and border flowers. Roses were well shown by Mr. JOHN CROSSING, Penarth Nurseries, whose pillars of Excelsa and Blush Rambler, and big vases of G. C. Waud, George Dickson, Avoca, Mrs. Sharmman Crawford and Irish Elegance, were very beautiful.

Rev. J. H. PEMBERTON, Havering, showed Roses, chiefly those of his own raising, notably, Vanity, Miriam, a new orange-salmon variety, Pax and Mermaid.

CARNATIONS.

Messrs. ALLWOOD BROTHERS, Hayward's Heath, displayed their Carnations Mary Allwood, Destiny, and Wivelsfield Claret, and a group of varieties of their Dianthus Allwoodii, Harold being the most prominent among them. Mr. C. W. HERBERT, Acocks Green, exhibited a charming selection of his Pinks; Queen Mary was the foremost variety, but The Imp, Simplicity, Dickie Felton and Progress were all good. Mr. CHAS. WALT, Bath, exhibited Carnations pleasingly and made a special feature of Eric Walters and My Clove, border varieties, and Enchantress Supreme, a well-known perpetual sort.

The superb border Carnations exhibited by Mr. JAMES DOUGLAS, Great Bookham, found many admirers, especially the varieties Purity, The Grey Douglas, The King, Primrose Dame, Gordon Douglas, White Clove, Bookham Rose and Cleopatra—a very fine exhibit. Messrs. W. CUTBUSH AND SON, Highgate, had a charming group of polyantha Roses, Carnations and Petunias, with a background of Astilbe America and blue Hydrangeas. Rising from the Roses were elegant Palms and baskets of the most popular sorts of perpetual Carnations.

Carnations were exhibited freely by Messrs. STUART LOW AND CO., Enfield, this firm setting up their own novelties and a few other popular sorts in vases of various sizes.

SWEET PEAS.

Sweet Peas were exhibited extensively and well by Messrs. SUTTON AND SONS, Reading. This firm displayed its usual good taste in design and arrangement, and exhibited flowers of fine size, clear colouring and good form. A few of the outstanding varieties were John Porter, Southcote Blue, Doris, Tangarine, Mrs. Tom Jones, Sutton's Cream, Edward Cowdy, Annie Ireland and Ivorine.

Messrs. DOBBIE AND CO., Edinburgh, were fortunate in having a light position wherein to show their splendid collection of Sweet Peas. There were glorious bunches of flowers of Royal Scot, Melba, Mrs. Tom Jones, Royal Purple, Claret Cup and The President.

Messrs. ALEX. DICKSON AND SONS, Belfast, made a wonderful display of Sweet Peas, and showed great sheaf-like masses of the varieties Caress, Hawmark Scarlet, Barbara, Hawmark Lavender, Bridesmaid, Hawmark Maroon, and Charity.

ROCK AND FORMAL GARDENS.

A formal garden designed and planted by Messrs. BAKERS, Wolverhampton was a great source of attraction. On a terrace backed by a border of Delphiniums and Liliums, a seat was placed, whence the little Lily pool and the walled-in bays of Campanulas, with the beds of Erigerons and Spiraea Queen Alexandra beyond could be viewed. The whole garden was within a semi-circular border, well filled with Delphiniums, Gladioli, Poppies and Liliums. If we found any fault with the arrangement, we should say that Messrs. BAKERS attempted rather too much in the space allotted.

Mr. CLARENCE ELLIOTT, Stevenage, contributed a miniature rock garden, wherein were Campanula Miranda, a very dainty plant, C. Pulloides, Dianthus Atkinsonii, and other pretty plants. Messrs. BOWLES AND SKARRATT, Cheltenham, had a small collection of Nymphaeas, set amid border and alpine plants in great variety. Anthyllis Lemniana, a tiny yellow-flowered shrub, was a very interesting plant in this collection.

Messrs. PIPERS, Bayswater, showed a combined exhibit which included a brightly-planted rock garden, a Lily pool, herbaceous borders and a little formal plot. Among notable plants in this exhibit were Lonicera Hildebrandii, Buddleia velutina, Ilex Percey, and Bignonia grandiflora. Messrs. MAXWELL AND BEALE, Broadstone, Dorset, submitted a little alpine garden, rather thinly planted with Primula Munro, Campanula pumila, Viola Clarence Elliott, Dianthus deltoides albus, Ophris apifera and other dainty little plants.

HARDY FLOWERS.

Messrs. BARR AND SONS, Covent Garden, had a large, oval group of hardy flowers in which they displayed Lavatera Olbia, Alstroemerias, Delphiniums, Scabious and Liliums in excellent variety. Mr. J. C. ALLGROVE, Slough, had a capital exhibit of interesting hardy plants; a few of these were Magnolia Thompsoniana, Eremurus Bungei magnifica, Spiraea gigantea, Fremontia grandiflora, and Trollius Ledebouri.

Mr. AMOS PERRY, Enfield, showed a collection of the finer and more beautiful varieties of hardy ferns and had a grand specimen of his new Polystichum angulare divisilobum densum robustum in the centre. On either side of the ferns this firm grouped popular border flowers making special features of Delphiniums, Eremurus Bungei, Lilium Brownii, L. testaceum and L. pardalinum.

A large collection of hardy border flowers was submitted by Messrs. A. A. WALTERS AND SON, Bath; Gaillardia Monarch, Delphinium Moorheimii, Aster mesa grande speciosa (?), and Chrysanthemum maximum Beauty of Bath, were a few of the best subjects. Messrs. RICH AND CO., Bath, had a pretty exhibit of Phloxes, Spiraeas, Buddleia variabilis Veitchii, Pyrethrus and Gaillardias.

Messrs. W. J. GODFREY AND SON, Exmouth, exhibited extensively and showed a number of pink Astilbes, their large, mauve Scabious Pride of Exmouth, Gladioli, Erigerons and many other beautiful and useful border flowers. In another group this firm staged Nephrolepis Ferns in variety.

Mr. H. CLARKE, Taunton, made up a pretty exhibit of Violas, Erigerons and Alstroemerias, the Violas predominating.

Messrs. WATERER SONS AND CRISP were represented by border and alpine plants, and they grouped the latter in pleasing fashion in front of the former, in little groups. Campanula

turbinata grandiflora, C. acutangulare, C. pulloides, C. pusilla alba, C. G. F. Wilson, Astilbe simplicifolia, Wahlenbergia vincaeflora, Verbena tenora Mahonettii and Hypericum empetrifolium were all delightfully shown.

Mr. MAURICE PRICHARD, Christchurch, almost filled the side of one tent with hardy border flowers. He massed Phloxes, Chrysanthemum maximum vomerense, Aconitum Napellus Spark's variety—very dark purple—Astilbe Ceres, A. Gloria, A. Vesta, Lilium candidum, Delphiniums, and Lupinus. In the group of hardy flowers from Messrs. R. TUCKER AND SONS, Oxford, we noted Campanula latifolia Bourghaltii, Lavatera Olbia, Potentilla Gibson's Scarlet, and Trollius pumilus yunnanensis—golden orange.

Alstroemeria revolutum, Erigeron mesa, Campanula lactiflora, Lavatera Olbia rosea, Oenothera biemiss Golden Wave, Aconitum anthora (cream coloured), and Gaillardias, were the chief subjects in a large display made by Messrs. B. LADHAMS, LTD., Shirley, Southampton. Delphiniums were boldly shown by Mr. W. WELLS, JUNR., Merstham, and the leading varieties were The Alake, and Mrs. H. Carnegie; with these were Salvia virgata, Alstroemerias, Chrysanthemum maximum Mrs. L. Bell, and other good border plants. Messrs. REAMSBOTTOM AND CO., Geashill, Ireland, had a pleasing exhibit of their fine strain of Anemones.

TREES AND SHRUBS.

Messrs. WATERER, SONS AND CRISP had a large and very fine exhibit of topiary work, and every specimen was British grown and trained. The bells of Golden Yew and the big arm-chairs of Golden English Yew were unusually fine examples. Other fine things were standards of Retinospora filifera aurea, Taxus adpressa aurea, T. Dovestonii, and Green and Golden Hollies. Of its kind, this was a wonderful exhibit and shows that one need not depend on Dutch growers for topiary work.

Mr. T. LEWIS, Hanwell, showed a handsome collection of flowering shrubs associated with Japanese Maples in variety. The late Rhododendrons—Warrior, Mdm. Cavalho, Chas. Noble, Major Joicy and Mr. Fitzgerald were notably fine. Kalmias were good for so late a date. Fine specimens of Waterers' Golden Holly, Juniperus Pfitzerianum, Prunopitys elegans, Retinospora plumosa argentea, and a standard of Phillyrea elegans were other plants of outstanding interest.

In the group from the DONARD NURSERY CO., Newcastle, Co. Down, there were numbers of the rarer trees and shrubs. A few that attracted us were Pittosporum Mayii, Fremontia californica, Leptospermum scoparium, Olearia semi-dentata, and Spiraea Aitchisonii.

Messrs. CHEAL AND SONS, Crawley, were exhibitors of hardy shrubs, and showed Coriaria terminalis, Zenobia speciosa, Ceanothuses and other good things.

FRUIT AND VEGETABLES.

Messrs. G. BUNYARD AND CO., Maidstone, contributed a large group of pot trees of Peaches and Nectarines, all freely fruited and associated with cordon Red and White Currants and Gooseberries. The finest specimens of Peach trees were those of the varieties Duke of York, Peregrine, Duchess of Cornwall, Hale's Early and Libra, the last very heavily fruited.

A splendid exhibit of fruit trees in pots, shown by the KING'S ACRE NURSERIES CO., was a fine demonstration of high-class orchard house cultivation. The trees were freely cropped and carried large fruits, finely coloured. The principal kinds and varieties were Apples Emperor Alexander, Gascoigne's Scarlet, James Grieve, Cellini and Lady Sudeley; Pears, Clapp's Favourite, and Pitmaston Duchess; Jefferson Plum; Humboldt and Lord Napier Nectarines and Peregrine Peach.

Messrs. SUTTON AND SONS' collection of vegetables was splendidly arranged; there were 160 dishes, and in no instance was a variety duplicated. The Peas, V.C., Sutton's Perfection, Centenary Marrowfat, Ideal and Up-to-date, were especially good, and so were the various Cauliflowers.

Messrs. TOOGOOD AND SONS, Southampton, submitted a collection of well-grown vegetables, wherein Royal Marrowfat Peas, Perfection Marrows, Peach Bloom Tomatoes, and Masterpiece Cauliflower were exceptionally good.

A fine exhibit of twenty-nine baskets of Potatoes from Messrs. DOBBIE AND CO., attracted a great deal of attention. The tubers were clean, characteristic and of good size for the time of year. Most of the varieties were immune from wart disease, and the pick of the collection were Climax, Exhibition Red Kidney, Arran Comrade, Majestic, Nithsdale, The Bishop, Edzell Blue, Kerr's Pink, and America.

Messrs. E. WEBB AND SONS, Stourbridge, had an effective display of Sweet Peas and vegetables, the former arranged in three large groups with the vegetables between. Of the vegetables there were fine samples of Early Mammoth Cauliflower, New Delivery Lettuce, Stourbridge Marrow and Dwarf Peerless Peas, Bountiful Dwarf Beans and Defiance Carrots.

From the State of Victoria, Australia, came a wonderful exhibit of Apples and Pears, in boxes, as packed. Josephine de Malines, Black Achan and Winter Nelis Pears, Rome Beauty Delicious and Jonathan Apples were the pick of the several varieties shown. The British South African Co., Southern Rhodesia, showed a dozen and a half cases of splendid Navel Oranges, in capital condition. THE GOVERNMENT OF THE UNION OF SOUTH AFRICA, Trade Commissioners Dept., 90, Cannon St., London, showed, in a very tasteful group, baskets of Navel and other Oranges, Grape Fruits, and Limes.

THE HIGH COMMISSIONERS FOR NEW ZEALAND, 415, Strand, showed a collection of New Zealand Apples and had fine examples of President Barry, Winter Nelis, Winter Cole, Josephine de Malines, Spitzbergen was the best Apple on view, in appearance, but Cox's Orange Pippin was also fine.

OUTDOOR EXHIBITS.

The wet weather of the first morning did not improve the appearance of the exhibits in the open. Mr. HERBERT JONES, Bath, contributed a formal garden, with walls and paving of small stones, and a pergola of similar material; the design was pleasing and the planting restrained. Messrs. WHITELEGGE AND CO., Chislehurst, constructed a rock garden with streamlet and Lily pool. The rockery was planted with groups of Campanulas and other bright-flowered plants now in season.

Messrs. J. JEFFERIES AND SON, Cirencester, showed a collection of well-grown Conifers and Mr. JAS. MACDONALD, Harpenden, showed grasses of various kinds and some beautiful turf. Capt. SYMONS-JEYNE, Chalk Pit, Henley, constructed a rock-garden with streamlet and pool. The soft rocks were advantageously disposed, but the planting erred on the side of scantiness. Mr. KLINKERT, Kew, showed a large collection of clipped trees and shrubs trained into a variety of quaint shapes.

SCIENTIFIC EXHIBITS.

In the tent devoted chiefly to scientific exhibits the ROYAL HORTICULTURAL SOCIETY staged models of insect pests, showing the life histories of the various subjects. The MINISTRY OF AGRICULTURE and LONG ASHTON EXPERIMENT STATION sent exhibits; various firms submitted garden plans and designs, and photographs of garden scenes. Paintings of flowers and garden scenes were shown in considerable numbers, and the MARQUIS OF BUTE (gr., Mr. W. H. Farmer), Cardiff Castle, exhibited a goodly collection of bottled fruits.

NEW PLANTS.

AWARD OF MERIT.

Corocopsis grandiflora Perry's var.—Shown by Mr. AMOS PERRY, Enfield.

Carnation Blush Clove.—A blush counterpart of New White Clove. Shown by Mr. JAMES DOUGLAS, Great Bookham.

Begonias Lady Rhonda and Lady Cory.—Shown by Messrs. BLACKMORE AND LANGDON, Bath.

Sweet Peas Pink Pearl and Orchid.—Shown by Messrs. DOBBIE AND CO., Edinburgh.

Campanula Bellardii var. *Miranda*.—Shown by Mr. CLARENCE ELLIOTT, Stevenage.

CUPS AWARDED.

Coronation Cup for the best exhibit in the show, Messrs. ALLWOOD BROS.; Wigan Cup for Roses, Mr. ELISHA HICKS; Gordon Lennox Cup for fruit, THE KING'S ACRE NURSERIES; Cain Cup for the best exhibit by an amateur, REGINALD CORY, Esq.

MEDAL AWARDS.

Veitch Memorial Medal.—For fruit shown by an amateur, to S. H. BYASS, Esq., Leandrough Castle (gr. Mr. German); for plants shown by an amateur (Hippeastrums), to Lt.-Col. Sir GEORGE HOLFORD (gr. Mr. Chapman).

Gold Medal.—To the STATE OF VICTORIA, for fruit; Messrs. SUTTON AND SONS, for Sweet Peas; Messrs. SUTTON AND SONS, for vegetables; Messrs. DOBBIE AND CO., for Sweet Peas; Messrs. BEN. CANT AND SONS, for Roses; Mr. MAURICE PRICHARD, for hardy flowers; Messrs. WATERER, SONS AND CRISP, for topiary; Messrs. PIPER AND SON, for water garden; Messrs. BLACKMORE AND LANGDON, for Delphiniums and Begonias; Messrs. J. CYPHER AND SONS, for Orchids and foliage plants; Mr. HERBERT JONES, for formal garden; and to TREVOR JONES, Esq., for Gloxinias.

Lindley Medal.—To the MINISTRY OF AGRICULTURE, for exhibits of plant diseases; and to LONG ASHTON EXPERIMENT STATION.

Silver-Gilt Hogg Medal.—Messrs. G. BUNYARD AND CO., for fruit trees.

Silver-Gilt Knightian Medal.—To the NEW ZEALAND GOVERNMENT, for Apples and Pears; to Messrs. TOOGOODS, LTD., for vegetables; and Messrs. DOBBIE AND CO., for Potatoes.

Silver-Gilt Flora Medal.—To Mr. GEORGE PRINCE, for Roses; Messrs. W. J. GODFREY AND SON, for herbaceous plants and Pelargoniums; Messrs. STUART LOW AND CO., for Carnations; Messrs. ALEX. DICKSON AND SONS, for Sweet Peas; Messrs. BOWELL AND SKARRATT, for Alpines; Mr. M. C. CROSSLING, for Roses; Mr. T. LEWIS, for Rhododendrons, Kalmias, and Maples; Messrs. W. TRESEDER, LTD., for Roses; the DONARD NURSERY CO., for rare trees and shrubs; Messrs. G. G. WHITELEGG AND CO., for a rock garden; and Capt. J. F. SYMONS-JEYNE, for a rock garden.

Silver Flora Medal.—To Mr. STEPHEN TRESEDER, for Roses; to Messrs. WALTERS AND SON, for herbaceous plants and Roses; Mr. C. WALL, for Carnations; Mr. VINCENT SLADE, for Pelargoniums; and Messrs. J. JEFFERIES AND SON, for Conifers.

Silver-Gilt Grenfell Medal.—To J. W. PYMAN, Esq., for Streptocarpus; the SOUTH AFRICAN GOVERNMENT, for fruit; Messrs. E. WEBB AND SONS, for vegetables; Mr. JAMES DOUGLAS, for Carnations; Messrs. W. J. GODFREY AND SON, for Pelargoniums; Messrs. J. CHIEF AND SONS, for shrubs; Mr. J. C. ALGROVE, for herbaceous plants; Messrs. BARR AND SONS, for herbaceous plants; Messrs. WM. CUTBUSH AND SON for Roses and Carnations; Mrs. NEALE, for Orchids; Sir JEREMIAH COLMAN, for Orchids; and Mr. L. R. RUSSELL, for stove plants.

Silver-Gilt Banksian Medal.—To Messrs. BAKERS, LTD., for formal garden; Messrs. JARMAN AND CO., for Roses and Sweet Peas; Messrs. WATERER, SONS, AND CRISP, for Alpines; and Mr. J. MACDONALD, for Grasses.

Silver Knightian Medal.—To the MARQUIS OF BUTE (gr. Mr. W. H. Farmer), for bottled fruits.

Silver Grenfell Medal.—To the BRITISH SOUTH AFRICA CO., for Oranges; Rev. J. H. FEMBERTON, for Roses; Messrs. R. TUCKER AND SONS, for herbaceous plants and Alpines; Mr. C. W. HERRERT, for Pinks; Mr. W. WELLS, Junr., for herbaceous plants; and Messrs. H. AND W. EVANS, for formal garden.

Silver Banksian Medal.—To Messrs. RICH AND CO., for herbaceous plants; Mr. M. KETTLE, for Raspberries; Messrs. MAXWELL AND BEALE, for Alpines; Messrs. B. LADHAMS, LTD., for herbaceous plants; Mr. CLARENCE ELLIOTT, for Alpines; and Mr. H. N. ELLISON, for Ferns.

Bronze Banksian.—To Mr. H. CLARKE, for herbaceous plants and Violas; Messrs. REAMS-BOTTOM AND CO., for Anemones; Mr. J. H. ISAAC, for Sweet Peas; and Mr. J. KLINKERT, for clipped trees.

Obituary.

John W. Bennett.—It is with deep regret we learn that Mr. John William Bennett died on June 21, at the early age of 49 years. Mr. J. W. Bennett was for 20 years gardener to R. H. Prestwick, Esq., at Tirley Garth, Tarporely, Cheshire, resigning that position in 1917. He then became gardener to Lord Wavertree, at Horsley Hall, Wrexham, but had to retire in 1918 owing to failing health. He was an enthusiastic and successful gardener and greatly loved and esteemed by all who knew him. He leaves a widow and two sons. The remains were laid to rest in St. Thomas' Churchyard, High Lane, near Stockport, on June 26.

James Allardyce Duthie.—The death occurred in a nursing home in Aberdeen on Friday, 2nd inst., of Mr. James A. Duthie, sole proprietor of the firm of Messrs. Ben. Reid and Company, seedsmen and nurserymen, Aberdeen. Mr. Duthie, one of the best known nurserymen in Scotland, was for a time employed with his father on a farm, and afterwards entered the firm of Messrs. Ben. Reid and Company as an assistant, in 1889. After gaining an acquaintance with the business in its various branches Mr. Duthie became traveller for the firm, and subsequently held a similar position with Messrs. Dickson and Company, Edinburgh. He returned to Aberdeen sixteen years ago as manager of his old firm, and three years later acquired the business. Mr. Duthie was a great authority on forestry and proprietor of one of the largest forestry nurseries in Scotland—that at Pinewood Park, Aberdeen. His extensive knowledge of forestry was recognised when he was appointed a member of the Consultative Committee of the Forestry Commission. He was a prominent member of the Aberdeen branch of the Royal Scottish Arboricultural Society, and took a leading interest in the affairs of that body as a representative on the governing council. Mr. Duthie, who was in his 52nd year, was predeceased by his wife some years ago, and leaves one daughter. He is survived by several brothers, the youngest of whom, Mr. Edwin C. Duthie, has been associated with him in business for the past twelve years.

ANSWERS TO CORRESPONDENTS.

BOOK ON GERANIUM CLASSIFICATION: *G. R., Ghent.* We do not know of any book such as you describe.

GRASS SEED MIXTURE: *C.* We have examined the sample of grass and Clover seeds, and cannot find any seeds of Cocksfoot grass therein.

NAMES OF PLANTS: *S. B.* The bulbous flower is *Eucomis punctata*. The pink-flowered plant probably *Haemanthus* sp.; specimen too poor for correct identification.

ORCHID SEEDLINGS: *G. R., Ghent.* There is no reason why linen sheeting should be used for sowing Orchid seeds upon. The material is a matter of choice, most growers using a more open material, such as is used for shading Orchid houses.

PLOUGH FOR GARDEN USE: *E. M.* Messrs. Ransome, Sims and Jeffries, Ipswich, supply suitable ploughs for garden use, to be drawn by a stout cob. Mr. Cook, implement maker, Lincoln, and Messrs. Howard and Sons, Britannia Ironworks, Bedford, would also be able to supply a suitable plough.

SEEDS OF ANTHEMIS CUPANIANA: *J. de M.* Perhaps Messrs. Barr and Sons, King Street, Covent Garden, London, may be able to supply seeds of *Anthemis cupaniana*. They offer plants in their catalogue.

WHITE POPLARS ATTACKED BY A BEETLE: *W. J.* The beetle attacking your Poplars is *Phyllodecta vitellinae*, and it occurs also on the Willow and Hazel. It is doubtful whether very much can be done to check it unless spraying on a large scale were adopted. The possibility of this will, of course, depend on the size of the trees, which is not stated.

THE Gardeners' Chronicle

No. 1751.—SATURDAY, JULY 17, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 63.12°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, July 14.
10 a.m.: Bar, 30.1; temp, 66°. Weather—Dull.

Peach Leaf Curl. Having regard to the ease with which Leaf Curl of Peaches is controlled it is remarkable how wide-spread this unsightly malady remains. So long as it was supposed that the mycelium of the fungus (*Exoascus deformans*) permeates in the tissues of the Peach tree, and growing with the new shoots infected them in turn, it seemed hopeless to attempt to check the malady by spraying. But a crucial experiment made some years ago at Wisley showed, nevertheless, that spraying may serve to arrest the disease in the most strikingly peremptory manner. A row of Peaches trained against the south side of a wall was chronically affected with Leaf Curl and almost completely unfruitful. It was decided to test the effect of spraying with Burgundy mixture, which had been used already with marked success by Dr. Horne in controlling American Gooseberry Mildew. In order to secure if possible a decisive result, one-half only of each fan-trained tree was sprayed. The work was done in the early spring, just before the buds were about to expand. The result was remarkable. As the new foliage developed that on the sprayed half of the tree was as clean as the hand of the healed leper—that on the other was distorted and discoloured after the drastic fashion of leaf-curlled foliage. The conclusion was therefore plain: that the spring infection is the result of the germination of spores shed from diseased foliage during the previous year, and lodged in or between the bud scales

where they hibernate, start into growth as the buds expand, and infect the young foliage. When this mode of infection is understood it is easy to realise also how it is that spring weather acts so often as the deciding factor—determining whether infection shall take place or not—for the spores are minute and are likely to infect the tissues of the leaf only under conditions most favourable to them. These conditions are either moist air and developing leaves gorged with water or dry air due to winds, with consequent injury to and reduced resistance of the young foliage. Hence it is that the gardener is apt to attribute Leaf Curl to adverse spring weather and to ignore the fact that it is only a contributory and not a prime cause of the disease. In view of these facts two conclusions may be drawn—one with certainty, the other provisionally; the former, that by spring spraying Leaf Curl may be abolished from our gardens; the latter, that spraying in late autumn or winter after the leaves have fallen may prove to be as effectual and possibly more convenient than spraying in the spring. It is to be hoped that experiments on these lines will be made and also that mycologists will complete their inquiry into the life history of this disease by ascertaining in what state the spores rest during the winter. The Burgundy mixture which was used at Wisley was composed of $\frac{1}{2}$ lb. of copper sulphate, $2\frac{1}{2}$ lb. of sodium carbonate and 12 gallons of water. Full details of the method of mixing are given in Leaflet No. 120 of the Ministry of Agriculture, copies of which may be obtained free on application to 4, Whitehall Place, London, S.W.

Royal Visit to the Edinburgh Botanic Gardens.—During the afternoon of July 5th Their Majesties King George and Queen Mary, accompanied by Princess Mary, who have been in residence at Holyrood Palace, paid an informal visit to the Edinburgh Royal Botanic Gardens. They were met at the entrance by Sir Isaac Bayley Balfour, the Regius Keeper, his Deputy, Mr. W. W. Smith, and Mr. R. J. Harrow, who escorted them through the grounds. A considerable time was spent there, especially in the Rock garden. Before leaving Her Majesty and Princess Mary were presented with bouquets by two little granddaughters of Sir I. Bayley Balfour.

Trial of Cauliflowers at Wisley.—The Royal Horticultural Society will carry out a trial of Cauliflowers during the next season. A packet of seed of each variety for trial should be sent to reach the Director, R.H.S. Gardens, Wisley, Ripley, Surrey (from whom the necessary entry forms may be obtained), by July 31, 1920.

Gold Medal Award for Mr. Amos Perry.—Mr. Amos Perry was awarded a Gold Medal at the Cardiff Flower Show for his exhibit of Ferns, Lilies and Herbaceous Plants. This award was omitted from the original list issued to the Press. By an oversight we omitted to refer in our report of the Cardiff show to the large exhibit of Dahlias arranged by Messrs. W. Treseder, Ltd.

Sandy Floral and Horticultural Society.—From the schedule of the Sandy Floral Horticultural Society we gather that at the show to be held in Sandye Place Park on August 26, there will be several new classes, and prize money has been increased on a general scale. Horticulture and agriculture in every branch are liberally provided for. An attractive new class is for a group of hardy cut flowers, arranged for effect, cut foliage optional, space allowed 10 ft. by 10 ft.; prizes £5, £3 and £2. Some 15,000 people visit this grand exhibition each year, and on August 26 visitors will be able to attend just before the railway fares are increased. Mr. F. W. Western, Sandy, Bedfordshire, is the secretary of the society.

Retirement of Sir Ailwyn Fellowes.—The members and staff of the Agricultural Wages Board entertained Sir Ailwyn Fellowes at a farewell dinner on the 6th instant, on the occasion of his resignation of the chairmanship of the board. Sir Henry Rew, deputy chairman of the board, occupied the chair, and in addition to the members and staff of the board there were also present several chairmen of District Wages Committees and the new chairman of the Board, Mr. Collingwood Hope. The toast of the chairman of the board was given by Mr. F. D. Acland, M.P., Mr. H. Padwick and Mr. W. R. Smith, M.P., and Sir Henry Rew on behalf of the members and staff presented to Sir Ailwyn Fellowes a silver inkstand, suitably inscribed, with an album containing the signatures of the subscribers. Sir Ailwyn Fellowes, in expressing his thanks, stated that he had relinquished the chairmanship with much regret. He referred to certain rumours that in his letter to Lord Lee he had not given all the reasons for his resignation, and he stated emphatically that there was no ground for such statements. The position of chairman was an anxious and difficult one, but the personal good feeling which had prevailed and the loyal support he had received from all sections had greatly lightened his task.

Kudzu.—From tests carried out in the United States* it appears that the Japanese Leguminous plant Kudzu (*Pueraria thumbergiana*) is likely to prove useful for forage purposes and is, moreover, an excellent subject for training over arbours and porches. It grows with great rapidity and climbs to a height of 70 ft. or more. In more southern districts of the United States it bears its clusters of purple blooms freely, but in the latitude of Philadelphia it blooms only occasionally. In Japan, Kudzu is cultivated on rough rock land and steep hillsides, where it is utilised for pasture. In Florida, where it has been used on a small scale for "hay," the plant yields at the rate of 10 tons to the acre.

R.H.S. Teachers' Honours Examination.—Ten candidates entered for the R.H.S. Teachers' Honours Examination. Of these, six satisfied the examiners, three failed, and one did not present himself. The examination consisted of written papers, practical work and a *viva-voce* examination. The practical and *viva-voce* examinations were held at the Society's gardens at Wisley, Surrey, on June 17th. The examiners report that much of the practical work did not reach the standard expected of honours candidates. Particularly was this the case with the ground operations, which showed want of practical knowledge. The same defect was also apparent in the work done in the potting shed. The summer pruning was well done. In the recognition of pests and the descriptive work, some few candidates did fairly well, but, on the whole, the work of others showed lack both of knowledge and of observation. The examination is divided into the following sections:—(a) General Horticulture as applicable to School and Cottage Gardens; (b) Fruit growing in the open; (c) Vegetable growing in the open, or with only the most simple protective aids; (d) Diseases and pests. The following candidates secured the Honours Certificate:—Section (a):—W. G. Rushton, 6, Knoll Road, Sidcup; Miss E. Pugh, 5, Talbot Road, N.6; R. Berks, Peak Forest, Stockport; R. Lock, Gaunts Common, Wimborne, Dorset. Section (c):—W. A. Nicholas, 31, Mafeking Avenue, East Ham; W. E. Cole, Dyrham, Staple Hill, Bristol.

Vegetable Seed Production in Denmark.—The methods employed in Denmark for the production of Cabbage and Cauliflower seed are described by Mr. C. E. Hansen in *The Seed World*, April 2nd, 1920. In the case of Cabbages, seed is sown in seed-beds in April and the seedlings transplanted to the open ground towards the end of May. During October the heads are ready for lifting and those which are to be used for seed are pitted in heaps about 4 ft. deep and covered with seaweed to keep out frost. In early spring planting for seed purposes

*Kudzu. By C. V. Piper, Departmental Circular 29, U.S. Department of Agriculture.

begins. The heads are slashed with a knife with two cuts at the top at right angles to one another in order to facilitate the emergence of the flower stalk. A furrow is drawn with the plough and the heads laid in and a second furrow is drawn so as to throw about two inches of soil over the Cabbage heads in the first furrow and to serve for the planting of the second row, and so on. The climate of Denmark is mild enough for the thin covering of soil to serve as protection against spring frosts. By the end of August the seed is matured and ready for harvesting. Cauliflower plants for seed purposes are raised from seed sown under glass in September. The seedlings are pricked out into frames in glass houses in October and nets are used to give further protection during cold nights. In February the seedlings are transplanted to outside hotbeds, whence they are again transplanted in April or May into their permanent quarters in the open. The seed is ready for harvesting in September or October.

New Park for Leith.—By the terms of arrangement arrived at in connection with the passage through committee of the Edinburgh and Leith Amalgamation Bill, a large public park is to be provided within or close to Leith. This will be a great boon to the people of the old burgh which is now to be merged in Greater Edinburgh.

Flowers in Season.—Messrs. John K. King and Sons, Coggeshall, Essex, have forwarded a box of Sweet Peas gathered from plants growing in fields. The blooms are exceptionally fine, both in formation, colour and size. The varieties were Peace, pink; Eva, white; R. F. Felton, bluish-pink; Warrior, maroon; and Alexander Malcolm, scarlet. From Mr. H. Ballington, Matlock Bank, we have received some excellent new varieties of Delphiniums under seedling numbers. Mr. Ballington states that they were all raised from the variety King of the Delphiniums, crossed with the single Belladonna. The best sent were No. 1a, a very handsome spike of clear, bright blue flowers; 3, a large single flower of purple-blue colour with a white eye; 3a, a very deep rich blue variety; and 7, very pale blue with a many-white eye.

Fighting the Plague of Rats.—Very considerable headway in the reduction of the rat population and consequent saving in foodstuffs has been made in certain counties and boroughs, the local authorities of which, taking advantage of the powers given them in the Rats Orders, and following the advice tendered by the Ministry of Agriculture, organised measures under the supervision of a Rat Officer. When the present Act came into operation, other local authorities followed suit, but there still remain several, notably those of all the counties in Wales, excepting Anglesey, Merioneth and Pembroke, and in England the counties of Derby, Cumberland, Dorset, Gloucester, Huntingdon, Isle of Ely, West Suffolk, Oxford, Shropshire, Surrey, and the East Riding of Yorks, who have, so far, failed apparently to take any serious view of their responsibility in the matter, or at least to make adequate provision for grappling with the problem. One cause of the reluctance of these local authorities to move has undoubtedly been lack of support, amounting in some cases to opposition from the farming community, and the disposition of the existing Executive bodies to shelve the question until the new County Committees now being formed can tackle it. It cannot be too forcibly emphasised that what is required for the adequate checking of the rat plague is not excuses, but Rat Officers who will devote their whole time and attention to the matter.

Selecting Seed Potatoes.—It may seem early to discuss "seed" Potatoes for next season, and yet, if the best results are to be obtained, it is not too early to select seed of early varieties. In view of recent references to this subject in our columns it is of interest to observe that one of the largest Potato growers in the Kingdom has advised the Ministry of Agriculture that the great secret in successful Potato growing is to get proper seed. He considers that there would be a very considerable increase in

the Potato crop if allotment holders and others would pay more attention to this point. He maintains that as a class they do not produce one half of the Potatoes that they should do with the labour and the manures they now use, and sends the following account of the system which prevails in Jersey, where the Potato growers largely secure their seed from their own stocks in the following manner:—"The most green and vigorous plants are dug up for seed when the Potatoes have reached about three-quarter growth. These Potatoes are put in boxes and left in the sun until they get thoroughly green and hard, when they are put away in a shed where they will be secure from frost for the winter. The Potatoes are examined about every ten days to see that they are not sprouting too much; this is prevented by giving them more air or moving them into a cooler position. It is advisable not to let them grow sprouts more than three-quarters of an inch in length. If of an early variety these Potatoes may be planted early in March, or if of a late variety at the end of March or the beginning of April. . . . There is no comparison between seed saved in this manner and sets saved from Potatoes that have been allowed to ripen. Potatoes for this purpose must be lifted while they are in vigorous growth and before any signs of blight appear, as once blight has shown itself in the haulm the Potatoes would not keep, if dug green, as the spores from the leaves and the spores on the land immediately affect the tuber that is dug immature." The Ministry has no hesitation in confirming this advice.

Northern Literary and Scientific Societies.—The annual meeting of these societies was held at Elgin on Friday, June 25. Colonel C. J. Johnston, of Lesmurdie, presided, and the following societies were represented:—Banff Field Club, Elgin and Morayshire Literary and Scientific Association, the Committee of Management, Falconer Museum, Forres; Inverness Scientific Society and Field Club, and Nairn Literary Institute. The members received a cordial welcome from Colonel Johnston, after which some remarkably erudite and instructive papers were read, the readers being Mr. Leigh, B.Sc., Duff House, Banff, on "The Cold Spell of November, 1919," which will long remain memorable for the remarkably severe frost that occurred about the middle of that month, the coldest on record; Mr. J. J. Burgess, M.A., Dyke, read a very instructive paper on "The Flora of Culbin," in which he described several specimens which had previously been missed by botanists visiting the Culbin; some excellent papers on natural history subjects were also read. In the evening the members dined together in the Station Hotel, Colonel Johnston again presiding. On Saturday the members had an excursion by car to Duffus Castle, Hopeman Quarries, Burghead, Forres, and the famous Sands of Culbin.

Mr. Hay's Appointment to Regent's Park.—Mr. Thomas Hay, who has been superintendent of Greenwich Park for the past eight years, and was previously gardener to the Marquis of Linlithgow, Hopetoun House, South Queensferry, Linlithgowshire, has been appointed superintendent of Regent's Park, in succession to Mr. A. D. Webster, whose retirement we announced last week. Mr. Hay's success as a cultivator of hardy flowers at Hopetoun and Greenwich is an assurance that the high horticultural reputation which Regent's Park has so long held will be fully sustained.

Oak Timber from Westminster Hall Roof.—Among the many interesting exhibits at the Empire Timber Exhibition held at Holland Park, few attracted more attention than those concerned with the old roof timber of Westminster Hall. These included a loan from H.M. Office of Works, of (a) a decayed purlin about 20 ft. long; (b) a piece of purlin about 10 ft. long; (c) a piece of moulded purlin about 10 ft. long; (d) a specimen of riven wall post from No. 8 truss; (e) a specimen of decayed foot of truss No. 5; (f) a specimen of tracery; (g) a specimen of a decayed end of a hammer post from truss No. 3; (h) a purlin showing deflection and method adopted in furring up to receive

rafters; (i) a specimen of new Oak supplied from Wilgh. The Victoria and Albert Museum lent two drawings: (a) section of roof of Westminster Hall, showing state of great purlin in 1917; (b) illustrations of Woodboring Death Watch Beetle, showing larva, pupa, complete beetle and position when at work. The Science Museum lent a model of the Bay of Westminster Hall, showing Hammer Beam Roof.

Proposed National War Memorial.—Hyde Park Corner has been suggested as the site for a National Memorial to those who fell in the great war. The proposed memorial would take the form of a pylon 160 feet above the floor of a great hall at its base. On either side of this would be flanking temples having ground floors measuring 58 feet by 28 feet.

Preserved Fruits.—Many of the choicest of those delicacies which come under this term are received from China, and there is a considerable trade in preserved fruits in Hong Kong. Recent heavy demands have caused a sharp revival in business with Europe and America. Great Britain is still one of the best customers, but the United States took the lead in 1919, when shipments to that country were valued at 151,793 dollars, as compared with a value of 101,778 dollars in 1917. The high price of sugar militates against any very great increase in the trade and there is only a limited quantity of sugar available in the Hong Kong district.

Presentation of Flowers and Vegetables to the Lord Mayor of London.—The annual presentation of flowers, herbs and vegetables to the Lord Mayor and Lady Mayoress of London was made by the Master, Wardens and Court of the Gardeners' Company at the Mansion House, on Tuesday, the 13th inst. It is considered this gift commemorates the action of the Lord Mayor who, in 1632, ordered the arrest of certain unauthorised persons who were trading as gardeners in defiance of the Company's charters.

Appointments for the Ensuing Week.—Wednesday, July 21.—Southampton Royal Horticultural Society's Summer Show; Hereford and West of England Rose Society's Show. Thursday, July 22.—Royal Botanic Society's Committee Meeting. Friday, July 23.—Birmingham Summer Show (two days); National Sweet Pea Society's Summer Show, at Birmingham (two days). Saturday, July 24.—Wandsworth Flower Show.

"Gardeners' Chronicle" Seventy-Five Years Ago.—*Horticultural Society's Show, Chiswick.*—With the 12th of July the Garden Exhibitions of the Horticultural Society have terminated for this year, and the beauty of the closing scene was worthy of that unparalleled display of flowers which ushered in the season. We have witnessed many July Exhibitions, and our general impression has been unfavourable to them, for they are usually a spectacle of faded or fading beauty. But no symptom of the kind was visible last Saturday. On the contrary the plants were in some respects finer than on any former occasion during the year—in the Orchids and Heaths for example—and the fruit was admirable. Although we seldom address ourselves in this part of our journal to the details of exhibitions, yet we must be permitted on this occasion to mention the remarkably beautiful fruit sent from the Queen's Garden at Frogmore. It abundantly proved Mr. Ingram to be worthy of the distinguished honour of being Her Majesty's gardener. There was also a very remarkable new species of Fuchsia, called serratifolia, exhibited by Messrs. Veitch and Company, of Exeter; it is one of the finest things that have been introduced by that very enterprising firm, who also added a graceful little novelty of a lower rank, the *Salpichroa glandulosa*, with trailing shoots and pale yellowish-green pendent tube-shaped flowers. We are authorised to add that the arrangements for the next season will very soon be taken into consideration by the committee already appointed for that purpose. And we may invite all persons having suggestions to make respecting the details of the exhibition to communicate their views in writing to the secretary without loss of time. *Gard. Chron. July 19th, 1845.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA ALBANIA.

MESSRS. HASSALL AND CO., Southgate, send a fine inflorescence of an unrecorded cross, raised by the firm, between *Cattleya O'Brieniana* alba and their famous *C. Harrisoniana* alba Stanley's variety, for which a first-class certificate was given at the meeting of the Royal Horticultural Society on September 15, 1908. The cross retains the compact shape, almost equal ovate sepals and petals, the well-displayed lip and clear wax-like whiteness of *C. Harrisoniana* alba, but is increased in size. It is an excellent addition to the large and useful section of white Orchids obtained through *C. O'Brieniana* alba, and is also delicately fragrant. Mr. John C. Cowan, Messrs. Hassall's manager, states that an additional merit in this class is the extraordinary time during which the flowers remain perfect, either on the plant or as cut blooms.

ODONTOGLOSSUM SPLENDIDUM ALBUM.

The fine specimen of *Odontoglossum splendidum* album illustrated in Fig. 15, was grown at Cardross Park, Dumbartonshire, the residence of Sir Archibald Denny, Bt. The plant was presented to Sir Archibald Denny some time ago by Sir Jeremiah Colman, and is specially interesting in that it has been grown at Cardross Park, among various greenhouse plants, in a house not specially constructed for Orchids. The spike shown carried over forty blooms, but some of the flowers were removed before the photograph was taken. To flower an *Odontoglossum* successfully in a mixed collection of plants is something of an event, but to have cultivated it so well that it produced a spike of over forty flowers is nothing less than remarkable.

COELOGYNE PANDURATA.

This strikingly handsome *Coeologyne* is making its season's growth in the warm house, and when new roots appear the plant may be top-dressed or repotted. As the pseudo-bulbs are produced at distant intervals on the rhizome, a long, teak-wood basket or raft is the best receptacle. Ample drainage material should be provided. The usual mixture of soil may be used. T. B.



FIG. 15.—ODONTOGLOSSUM SPLENDIDUM ALBUM AT CARDROSS PARK.

NEW HYBRIDS.

(Continued from May 1, p. 213.)

Name.	Parentage.	Exhibitor.
Brasso-Laelio-Cattleya Poshychinda	B.-L.-C. Veitchii x L.-C. callistoglossa	Sanders.
Brasso-Laelio-Cattleya Schroglossa	B.-L.-C. Arderniae x C. Schroderiae	Baron Schroder.
Cattleya Aroon	Blackii x Loddigesii alba	Sanders.
Cattleya Muriel	Dusseldorferi Undine x Mendelii alba	Mrs. J. J. Neale.
Deudobium Frimularii	Natural Hybrid	W. Horridge, Esq.
Dendrobium Gattson Sunray	illustre x Dahnseianum Juteum	Sir J. Colman.
Laelio-Cattleya A. Taylor	Dominiana x Gladiator	Flory & Black.
Laelio-Cattleya Chimera	L.-C. Hector x C. Dowiana Rosita	Flory & Black.
Laelio-Cattleya Mrs. Willoughby Pemberton	Baroness Emma x eximia	Baron Schroder.
Laelio-Cattleya Nazimova	L. pumila x C. Tityus	Flory & Black.
Laelio-Cattleya Parlova	C. Empress Frederick x L.-C. Pi arro.	Flory & Black.
Laelio-Cattleya Fanthe	L.-C. Dominiana x C. Warneri	Armstrong & Brown.
Laelio-Cattleya W. E. Bisset	L.-C. Martineii x C. Carmen	Flory & Black.
Miltonia Memoria Crown Princess Margaret	Unrecorded	Sanders.
Odontioda Armstrongii	Oda. Vuylstekeae x Odm. Armstrongiae	Armstrong & Brown.
Odontioda Camden	Oda. Coronation x Odm. Illustrissimum	E. R. Ashton, Esq.
Odontioda Corojas	Oda. Coronation x Odm. Jasper	Armstrong & Brown.
Odontioda Dauntless var. Blue Bird	Oda. Coronation x Odm. Armstrongae	Armstrong & Brown.
Odontioda Decia	Oda. Charlesworthii x Odm. Mars	Armstrong & Brown.
Odontioda Gattson Glory	Odm. King George V. x Oda. Colmaniae	Sir J. Colman.
Odontioda Isabella	Oda. Chanticleer x Odm. crispum	Charlesworth.
Odontioda Vera Belle	Oda. Bella x Odm. Thais	S. O. Stephenson, Esq.
Odontocidium Thwaitesii	Oncid. tigrinum x Odm. crispum	R. G. Thwaites, Esq.
Odontoglossum Adula	eximium x Doris	Pantia Ralli, Esq.
Odontoglossum Bonaparte	Aglao x percutum	W. R. Facey, Esq.
Odontoglossum Diamond	King Arthur x eximium	Messrs McBean.
Odontoglossum Eden	Eva x eximium xanthotes	Pantia Ralli, Esq.
Odontoglossum Emma	eximium x ashtadeense	Pantia Ralli, Esq.
Odontoglossum Eros	Othello x President Poincare	Flory & Black.
Odontoglossum Extraria	crispum x laevis	H. T. Pitt, Esq.
Odontoglossum Faustina	Dora x eximium	Charlesworth & Dr. Lacroze
Odontoglossum Mrs. Harry Worsley	amabile x Hallii King Edward	Mr. J. Evans.
Odontoglossum Philipp.	eximium x Phillisianum	Pantia Ralli, Esq.
Odontoglossum R. L. Harrow	crisp-Harryanum x eximium	Sanders.
Odontoglossum St. George var. Albion	eximium x Alexandrina	Charlesworth.
Odontoglossum St. Nicholas	eximium x Promerens	The Hon. R. James.
Odontoglossum multiflorum	Edwardii x Lindenii	Sir J. Colman.
Odontonia Bijou	M. vexillaria x Odm. mirificum	Charlesworth.
Odontonia Dora	M. Bleuana x Odm. Dora	Charlesworth.
Odontonia Gladys	M. Bleuana x Odm. eximium	Charlesworth.
Odontonia Lyona	M. Bleuana x Odm. mirificum	Charlesworth.
Odontonia Vulcan	Odontonia Louise x M. Charlesworthii	Charlesworth.
Sophro-Laelio-Cattleya Ruby	C. Lord Rothschild x S.-L.-C. Marathon	J. Cypher & Sons.

INDOOR PLANTS.

KALANCHOE.

Of the numerous succulent plants grown, none is more beautiful, nor more free-flowering than the Kalanchoes. The various members of the genus are of easy culture, and may be grown successfully in any ordinary warm greenhouse during the winter.

Kalanchoe flammea, introduced from Somaliland, in East Africa, is undoubtedly by far the finest species in cultivation. The plant averages 15 to 20 inches in height, and has branching cymes of vivid orange-scarlet flowers, carried well above the small, oval foliage. The individual flowers are about $\frac{1}{2}$ inch in diameter. The value of the plant for the decoration of the greenhouse and conservatory cannot be rated too highly, and specimens grown in small pots are most useful for table decoration. The cut blooms last fresh in water for 7 or 8 days. The flowering season is from June to the end of August.

K. carnea is another beautiful species introduced from South Africa, and is of great value on account of its delicately pink-coloured, wax-like, fragrant flowers. The plant blooms in December and continues in flower throughout January and February. This species was illustrated in *Gard. Chron.*, February 12, 1887, Fig. 48. Specimens exhibited by Messrs. J. Veitch and Sons on January 11, 1887, gained the R.H.S. First-Class Certificate. The stems of old specimens are said to form large boles in the plant's native habitat.

K. Excelsior is a hybrid raised between a deeply coloured form of *K. flammea* and *K. Benthii*. The flowers are of a deep rose colour and very attractive, the individual blooms being larger than those of *K. flammea*. This plant is at its best throughout June and July.

K. felthamensis, another distinct hybrid, was raised between *K. flammea* and *K. Kirkii*. The flowers are a brownish crimson, very fragrant, and produced freely during April and May.

K. kewensis is a very distinct hybrid raised at the Royal Botanic Gardens, Kew, between *K. flammea* and *K. Benthii*. The flowers are a bright rose-pink, the foliage partaking more of that of the pollen parent. It flowers at the same time as *K. Excelsior*.

There are many other kinds, but those mentioned are the best as decorative plants. Amongst allied plants that are worthy of cultivation for indoor decoration are *Kalanthes* (*Crassula*) *coccinea*, which produces masses of bright scarlet flowers; *Rochea* (*Crassula*) *falcata* with corymbs of bright crimson flowers; and *Crassula* *jasminea*, which has white flowers, tipped with crimson. John Heal, V.M.H.

TINNEA AETHIOPICA.

TIME was when this plant was by no means uncommon, but it has now apparently almost disappeared from cultivation. It is a shrubby member of the Labiate family, and produces small, dark-coloured flowers from the axils of the leaves at different periods of the year, but most freely during the late spring or early summer. From their tint the flowers are by no means showy, but they are remarkable for their delicious Violet-like fragrance, which, as with other sober-coloured flowers, *Boronia megastigma*, for example, is sufficiently pronounced to indicate its presence in a good-sized structure. It is not a very shapely growing plant, and needs to be stopped when young in order to ensure a bushy habit. Cuttings of the young shoots strike readily, and the plant will thrive in ordinary potting compost. This *Tinna* is a native of tropical Africa, and was introduced in the 60's of the last century. In the catalogue of the International Horticultural Exhibition of 1866 its name is to be found among the entries for a new plant in flower, but it was not awarded a prize, being certainly less attractive than some of the subjects shown, although in fragrance surpassing them all. The species is a native of tropical Africa, and requires the temperature of a stove or an intermediate house. There is a form of this plant known as *dentata* in which the opposite, elliptic leaves are slightly toothed. T.

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CATN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Budding of Fruit Trees.—All fruit trees may be successfully propagated by budding, and this method is practised now much more than formerly. Where suitable stocks have been procured for the budding of fruit trees they should now be in the right condition for performing the work. Late July and early in August are, perhaps, the best times for budding. It should be done if possible in damp, dull weather, as the buds often fall when it is very hot and dry. In such conditions it is wise to shade the buds from direct sunshine. The stocks and wood from which the buds are taken should be as equal in size as possible, and in the same condition. The buds should be taken from healthy, clean trees.

Grafted Trees.—Trees that were grafted in spring require attention. The clay may be removed, and the ties loosened; in some cases the grafts may have to be retied. Shoots that are growing freely need to be supported by Bamboo canes or other neat stakes, to prevent them being loosened or broken out by strong winds.

Red and White Currants.—If the fruit is to be preserved to prolong the season, attention should be given to keeping the bushes free from insect pests. Pinching out of the tops of all growths will help considerably to keep the bushes free from aphides. On light soil the roots may be mulched with short grass or some other suitable material, to keep the soil moist. Where these small fruits are required over a long season, some of the bushes should be grown in a north aspect, and they will succeed trained on north walls. It will be necessary to net the bushes to protect these late fruits from birds.

Fruit Room.—The fruit room should be cleansed on wet days when out-door operations are impossible. Let all the woodwork be thoroughly washed with strong scapy water, and the walls coated with lime wash. No rubbish or decayed fruit should be allowed to accumulate in the fruit room at any season of the year. Soft fruits will keep in a better condition when the air is circulating freely, therefore ventilate the room when soft fruits are placed therein.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNSMERE, Warter Priory, Yorkshire.

Androsace.—The numerous species of Androsace require close attention during the summer months. After the flowering period, red spider, aphids and slugs often do considerable damage to the new growth if steps are not taken to cope with these pests. In smoky districts the plants may be syringed occasionally with advantage. Where it is desired to increase the stock of "mossy" kinds, seeds may be sown in sandy peat as soon as ripe.

Tufted Pansies.—Reserve plants of tufted Pansies, that were cut back a few weeks ago, are now plentifully furnished with strong, new growths. Place fine soil, containing plenty of leaf-mould, amongst the shoots and water the roots frequently. A fortnight or three weeks hence sufficient roots will have formed to allow of setting the small plants in a shady position. As soon as new growth is observed, pinch out the points to obtain a bushy habit. Early in October the young stock will be in readiness to plant firmly in the permanent quarters. Deep cultivation is necessary to obtain a fine display of flowers.

Cucullia verbasci.—Caterpillars of the Mullein moth are very destructive to the foliage of Verbascum and Celsia, therefore it is necessary to keep a sharp watch for these pests. They

are easily discerned when full grown, being of a greenish-white colour with a bright yellow band across each joint, on which are small, black spots. Hand picking is the best method of eradicating them.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens,
Kew.

Cyclamen.—As soon as the young plants of the florist's Cyclamen are large enough they should be transferred to their flowering pots; those of five inches diameter being usually large enough. Old plants that have been grown on require six-inch or seven-inch pots. When old corms are retained for flowering a second season extra care is required, as they are very uncertain in starting into healthy growth. Good, shapely corms with a single crown of leaves, should be selected before the foliage dies down. Old corms with several crowns, or leaves growing from several parts of the corm, generally make unsatisfactory growth and usually fail to flower. Old Cyclamen corms may be shaken free of the old soil and planted out in a cold frame, or even out of doors. In fact this method often proves more successful than when they are grown in pots. In the autumn, when well grown, they may be lifted and placed in their flowering pots. Young plants are best grown in low, span-roofed pits, or in ordinary garden frames, and later in the season the lights may be left off at nights, as the plants are greatly benefited by dews. The compost for the final potting should consist of good medium loam, with the addition of a little leaf-mould, old mortar rubble and a little charcoal; lime in some form is very necessary for the successful cultivation of Cyclamens. During hot weather keep the stages well damped and spray the plants several times during the day, shading them from direct sunshine, as they enjoy cool, moist conditions. Some growers contend that it is a mistake to feed Cyclamens; this is a great fallacy, as they greatly benefit by frequent applications of diluted liquid manure and soot water, when they have filled their pots with roots. Manure and soot water should always be freshly made, and, when applied, the water should be little more than coloured. The sour smelling, semi-solid fluid that the inexperienced apply as liquid manure does more harm than good. Where they can be collected sheep droppings are excellent for making liquid manure.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq.,
Castleford, Chepstow.

Seedling Cypripediums.—The present is a suitable time to examine the collection of seedling Cypripediums to ascertain which need larger receptacles. The compost will usually be found to be in good condition and, in most instances, the plants may be transferred to larger pots without much disturbance of the roots. Fill the pots one-third of their depth with broken potsherds for drainage, and use a compost formed of Osmunda-fibre and Sphagnum-moss, the whole cut up moderately finely. Specimens nearing the flowering stage, and especially those with C. insignis either directly or indirectly in the parentage, may be grown in a mixture of fibrous loam, Osmunda-fibre, and a moderate sprinkling of crushed crocks. Smaller seedlings, in store pots, may be potted off singly, but the compost should be cut into fine portions and a little sharp sand added. Every assistance should be given the plants to enable them to make rapid growth and reach the flowering period in the shortest time possible. Keep their surroundings moist, and give due attention to shading. Thrips are troublesome pests and, if allowed to remain for any length of time, ruin the tiny seedlings. Directly thrips are detected, fumigate the house. An occasional spraying overhead with a reliable insecticide will do much to check the spread of insect pests.

General Remarks.—In an ordinary collection of Orchids much of the repotting and top-

dressing will have been finished, and for a few weeks an opportunity will occur to look over the plants for insect pests. The grower's time will now be chiefly devoted to watering, damping, shading and similar operations, while a few individual plants will require fresh soil. To keep thrips in check, the house should be fumigated mildly at frequent intervals, choosing, if possible, a warm evening when there is little or no wind. Air should be admitted early the following morning, and the blinds lowered a little earlier than usual. Plants badly infested with scale insects should be sponged with soft water which may be just coloured with an insecticide. In cleaning plants at this season, take care not to injure the young foliage. This remark applies particularly to Phalaenopsis and similar Orchids that only produce two or three leaves during the year. New growths among the Cattleyas, Dendrobiums, etc., may need the temporary support of a thin stake. In tying the shoot to the stick allow sufficient room for the pseudo-bulb to develop. Plants that are rooting freely should be afforded copious supplies of water until the new pseudo-bulbs are fully matured. Every division will need damping down twice or thrice each day, and no fire-heat will be necessary in the cool houses, while very little will suffice to keep the atmosphere circulating in the warmer sections. Cool house Orchids, and all seedlings in their various stages of development, will benefit by an occasional spraying overhead. The present is a suitable time to overhaul the heating apparatus and get everything in order before the grower takes his annual holiday.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Melons.—Continue to make fresh sowings of Melon seed, according to the demand and convenience, to have young plants in readiness for all purposes. Select varieties which set freely and ripen their fruits quickly. Use good loam free from animal manure, and feed the plants moderately when the fruits are swelling, giving just sufficient clear water to prevent flagging when the fruits are ripening. Any available pit or frame may be utilised for the growing of late Melons. A little bottom-heat is essential to the fruits setting, and also to their ripening, but almost anything that will ferment, combined with early closing of the frame, will maintain a temperature suitable for the growing of good Melons. Assist plants that are swelling heavy crops of fruits with a weak stimulant, which may be given at every alternate watering, but heavy waterings with strong manures would tend to produce gross growth and over-large fruits, deficient in flavour. Melons in frames do not need so much water; much depends upon the material they are planted in. Melons may follow Potatoes in frames with no preparation of the soil; the leathery foliage the plants make, and the number of fruits they produce, show plainly what may be done without spending time and labour in the making of fresh beds.

Cucumbers.—Old plants in frames in full bearing, or those showing signs of exhaustion, should be top-dressed lightly with rich compost as soon as the roots appear on the surface, and be watered occasionally with diluted liquid manure or stimulated with a sprinkling of concentrated fertiliser. Top-dressing and feeding should be generous, and the plants cropped moderately to keep them in full vigour. Examine the plants two or three times weekly, and keep each lateral growth pinched and the bed evenly covered with foliage. Linings of fresh fermenting material should be applied throughout the season in order to maintain a brisk temperature for the roots. Now is a suitable time to make sowings for autumn and winter supplies, and again later for spring supplies. Thoroughly cleanse the pits before the plants are set out, and grow them sturdily by keeping them well up to the roof-glass.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, WENTOE Castle, near Cardiff.

Spring Cabbage.—The first sowing of Spring Cabbage should be made during the third week in July, to be followed by a successional sowing early in August. Seed should be procured from a reliable source, as plants raised from an indifferent stock are usually apt to bolt in the spring. No trouble should be spared in preparing the seed-bed for this important crop. Select a piece of ground which is not too rich; and, after forking it over, work the surface to a fine tilth. Sow in shallow drills made fifteen inches apart and, should the ground be dry, give the drills a thorough watering the day previous to sowing. Flower of Spring and Emperor are two of the larger kinds that do well in most districts; Harbinger is also an excellent early variety. Where space permits, early varieties may be sown and transplanting from the rows so arranged that sufficient plants are left at the required distance apart to crop the ground. These will make small hearts by the late autumn; and provide early heads that will be much appreciated.

Turnips.—Turnips to provide supplies for autumn and winter should be sown at the present time. Yellow-fleshed and green or red-top varieties are hardy and suitable for present sowing. Select an open position and sow in drills made at fifteen inches apart. Trouble from Turnip-fly may be anticipated in the seedling stage, but if the seed is covered with a thin layer of sifted, old potting soil, it will favour a quick growth and, if followed by frequent dustings with dry grit, will help to ward off the fly.

HARDY FLOWER BORDER.

ANCHUSAS.

It is usual to see *Anchusa italica* growing in the herbaceous border as an isolated plant or in clumps of three or four specimens, and it is not often massed in a bed by itself as shown in the illustration reproduced in Fig. 16. This bed, which is by a stream in the Hon. Vicary Gibbs's garden at Aldenham, with a stone bridge as an effective background, proves a source of delight over a long period. The plants comprise splendid masses of the beautiful Gentian-blue flowers of *Anchusa italica* "Dropmore variety," contrasting and carefully mixed with *A. i.* Opal, the latter a charming variety with sky-blue flowers. This bed has an advantage in that the plants are perennial, and though in course of time *Anchusas* exhaust their vitality owing to the large amount of flowers they produce, yet this is easily remedied by propagating fresh stock from root cuttings (similar to the method adopted for Sea-kale) during the winter. These readily produce good plants, which are used for replenishing the bed in the spring. The *Anchusas* do not exhibit any great preference with regard to soil or situation, and thereby prove most useful for all types of gardens.

Anchusa myosotidiflora is another very lovely species, which looks more like a giant "Forget-me-not" than an *Anchusa*. This plant is equally happy growing alongside a stream, in a flower border, or in a large pan in the alpine house, and there is little doubt but that it is one of the most fascinating and beautiful of hardy herbaceous plants. *Edwin Beckett.*

THE DOUBLE HOLLYHOCK.

PRESENT indications point to a revival of this the most stately of all border flowers, though I can scarcely dare to anticipate an early recovery of the position it held some 40 years ago, or a little more, when it succumbed to the attacks of Puccinia disease. It is a very old garden flower and we are able to trace its very long history from the beginning of the sixteenth century—and towards at least the end of that century there were doubles in various colours, as well as singles—right on till to-day.

There are mediæval references to the Hollyhock, but these are applicable solely to *Althaea officinalis*, and from this plant the name was

transferred. The Hollyhock was propagated only by seeds up till 80 years ago, the quality of the flower meanwhile remaining unchanged until Mr. Baron, of Saffron Walden, by means of a rigid selection produced an improved strain. His stock was secured by Chater, of the same town, and the latter was the first to apply names to distinguish varieties, and to offer them for sale; at least as much may be gathered from an article of Glennie in 1846. Some names of early raisers of Hollyhocks are Bragg, Bircham, Roake Hawke, John Laing, Downie, and Paul of Cheshunt, the last of whom published a little book on the Hollyhock in 1851, entitled, *An Hour with the Hollyhock*.

Always the guard petals, which are the only petals in the single flower, had formed a conspicuous part of the double flower, and Paul states that English growers favoured a guard petal extending half an inch beyond the central floral parts, while Downie represented the Scottish growers as favouring three-eighths of an inch. Glennie, in his *Properties*, on the contrary suggested its final elimination, which later was effected, and this was adopted as the florists' type. For purely decorative purposes,

Cuttings which rooted readily in a cold frame were procured from the base of the plant in summer. A considerably larger crop of cuttings was obtained in spring from old stools which were lifted and potted in autumn and wintered in a cool structure. Many of these, however, failed through "damping off," owing to moisture hanging about the downy foliage. This may be obviated by placing the pots containing the cuttings, under a handlight, which is in turn stood in a cool house, where no moisture can gather on the leaves. But the surest way of producing plants from young shoots is by root grafting. This consists in selecting pieces of root of the same proportions as the stem of the scion to be introduced, fitting the two and joining them together till a living junction takes place. A pin thrust through stock and scion, or tying with a piece of matting, I have found always to be sufficient attachment.

A more effective way of increasing stock than any of the above is, however, by means of "eyes." Stems in this case are cut in pieces, each with an "eye," the incipient flower buds, if any, being removed and the



FIG. 16.—A BED OF ANCHUSAS AT ALDENHAM HOUSE GARDENS, ELSTREE.

however, the guard petal from an artistic point of view is a valuable asset, and it is still retained in seedling strains, very wisely, as I think.

I believe I am correct in stating that the Hollyhock, during the period of its popularity, was grown more extensively in Scotland and the North of England than in the Southern Counties. In the north the plants were largely grown against south walls in gardens and on the walls of cottages, but I have also seen them occupying similar positions in the south. In Scotland, too, they were employed with good effect near the back of mixed borders with a row of Dahlias in front of them, one between every two Hollyhocks. But in borders sufficiently wide to allow for grouping a truly grand effect is obtained by massing ten or so of a colour, and indeed where there is extent enough there is hardly a limit to the number that may be so massed.

It is indicative of how little was known regarding the propagation of the Hollyhock, that Glennie, writing shortly after Baron had commenced his experiments, recommended for this purpose the detachment of basal growths, each with a portion of root attached, but soon there were other means discovered, all of which I have practised with success.

As novelties were distributed at half a guinea each, every portion of a plant that could be employed for propagation was used.

"eye" buried in a light, open compost, either in an ordinary cutting box, or if a large number, in a cold frame. The eyes should be kept shaded till roots are produced, when each may be transferred to a 4-inch pot and grown on for planting out the next spring.

It must be understood in dealing with the Hollyhock that it is to all intents a hardy plant and that left to itself, it will flourish in the open for a number of years, and, therefore, that forcing for propagating purposes is inimical to its well being. Moreover, the double Hollyhock regarded as a garden flower is distinct in effect from the equally beautiful single flowered kinds. Perhaps the latter individually are the more beautiful, yet for effect, I am inclined to think that good colours in doubles gives more satisfaction. And the florist will always turn to varieties that meet his requirements, for pleasure, and I shall hope that the above notes on how to increase and maintain a stock of plants will be of use to those who have grown up since the collapse of the Hollyhock cult. Disease, certainly, has not been so prevalent of recent years—I at least saw none.

As a partial remedy, I would recommend spraying with a weak solution of lime-sulphur or 1 oz. to 2 ozs. of Gishurst Compound in one gallon of water. In my experience, when climatic conditions are favourable to the fungus, it is practically uncontrollable. *R. P. Brotherston.*

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

THE MARKET FRUIT GARDEN.

THE past month certainly did nothing to improve the fruit prospects.

What is commonly known as the "June drop" amongst Apples and Plums was unusually severe, and caused the thinning of crops which were already too light. Then the weather, though by no means excessively wet, went to extremes which were unfavourable to vegetation. The month opened with a week of cold, easterly winds, with white frosts on several mornings and bright sunshine during the day. These conditions favoured the spread of insect pests. And as so often happens when Apples are practically free from aphid at blooming time, the pests came later in the form generally called aphid blight, the air being full of winged migrants, the source of which never seems to have been satisfactorily explained. The insects swarmed over the trees—branches as well as leaves—the old grease-bands on the stems being thickly coated with victims. I think these late attacks are worse than early ones. Aphid in the bloom clusters can be dealt with fairly easily, but a sudden blight later is very difficult to cope with. The leaves are curled almost at once, and the enemies protected. However, prompt spraying with nicotine and soft soap certainly did good. Trees in the neighbourhood which were not sprayed are in many cases brown with dead leaves, whereas mine are now making new growth, and look fresh and green; but there will be a considerable proportion of "scrumps," or undeveloped fruit, amongst the Apples.

The weather for the remainder of the month, following the cold period, was mostly of the close, thundery type, which encourages fungous diseases. Apples and Pears are, in many cases, disfigured by scab, and brown rot has appeared on the fruit of these and of Plums. On the last-named it promises to be very serious, if I may judge from my trees of Rivers' Early Prolific. The fruits are just on the point of colouring, and many are rotting. Much of the fruit is split, probably owing to mild weather following the check of early June, and the disease doubtless gains entrance in the cracks. If other varieties follow suit as they ripen the loss will be enormous.

HIGH PRICES JUSTIFIED.

There is no doubt that this is a very poor fruit year. The crop reports of the Ministry of Agriculture indicate a short yield of orchard fruit in all parts of the country, and I am told that Kent is hit harder even than in 1918. This being the case, it is to be hoped that the public will realise that high prices are justified, and that nothing else can save the growers from a disastrous season. Although no official pronouncement has yet appeared, I believe that all control of fruit prices will cease at the end of July.

BLACK CURRANTS.

Growers have no reason to complain of the prices realised for bush fruits. I was offered

24s. per half-bushel (24 lb.) on rail for the whole of my crop of Black Currants; but I shall not regret having declined it, the market price having reached 30s. for several consignments. This crop has yielded well where the bushes are young and have had generous treatment. It seems to be almost impossible to give Black Currants too much manure, and for this reason there must be an advantage in having them in quarters by themselves. In my plantations they have been used only as a temporary crop between orchard trees, to be grubbed when the latter need all the room. Under this system there is a difficulty about giving the Currants all the manure they could use. One cannot prevent the young top trees from getting it too, with the result that they make rank growth and bearing is delayed. This is particularly the case with young Plums.

This has been a good season for the Boskoop Giant variety and those of the French group, as they have not suffered much from their common failing, "running off," or dropping of several Currants from the end of each bunch. The Goliath or Victoria type, on the contrary, has not cropped nearly so heavily as it did last year, when it yielded particularly well.

GRASS IN CULTIVATED ORCHARDS.

Of my Apple orchards, decidedly the best promise is given by one of eight acres which was sown with Lucerne in 1917. There is now quite as much grass as Lucerne, though a dressing of 10 cwt. of basic slag per acre, applied last autumn, has given a striking result in encouraging the Lucerne and Clovers. A heavy crop has just been cut and left under the trees to serve as a mulch. It is remarkable how soon these mulches disappear into the ground. The gain in humus and atmospheric nitrogen gathered by the leguminous plants must be considerable. I cannot, however, definitely conclude that this orchard looks better than those on cultivated ground because of the herbage. The trees are older, and are therefore less attractive to the aphides, which have done so much harm to the younger trees. It is always difficult to draw definite conclusions in fruit-growing.

NOTCHING FRUIT TREES.

Some interesting experiments in ringing and notching were carried out at the Long Ashton Experiment Station last year. The latter process has long been followed by the French in the training of restricted trees, but I believe it is not practised to any extent in this country. Yet it seems likely to be of use to nurserymen and others who have the care of trained trees, and even occasionally to the market grower. Notching consists of cutting out a small crescentic piece of bark by two cuts with a sharp knife, and it should be done in May or early June. Notching above a bud or shoot strengthens it; notching below weakens. At Long Ashton the trial was restricted to buds on one-year-old wood. The result of notching above a bud was in nearly every case that the bud affected made more growth than similar buds situated on untreated shoots. Notching below a bud in every case prevented growth and kept the bud dormant. The two effects were shown strikingly where both operations were performed on the same shoot. In this case, with the exception of the terminal three buds, which grew into shoots, every bud with a notch underneath remained dormant, and every bud with a notch above grew into a short wood spur. *Market Grower.*

FORESTRY.**VALUE OF WILLOW AS TIMBER.**

ON several occasions attention has been directed in these pages to the value of Willow timber for the making of cricket bats, and the sale lately of 160 trees from a sewage farm at Chelmsford, for £650, again brings the matter to the front. The Willow will thrive almost anywhere, and only a short time since a tree of the kind suitable for the making of bats, that was uprooted in the very heart of London, sold for £10, and for another still standing, £20 was refused. Comparatively little was done in the making of cricket bats during the war, and one of the largest manufacturers in London informed me that for one bat sent abroad during that period, a thousand were dispatched in pre-war days.

With the revival of cricket, the demand for high-grade Willow timber for bat-making has, however, again approached the normal, and the country is being scoured for trees of the right sort, in order to keep pace with the demand. Many kinds of Willow are found growing in this country, though one only produces the particular class of timber from which first-class bats are made. For ordinary or school bats the wood of the White or Huntingdon Willow (*Salix alba*) and other kinds are sometimes used, but it has been found that a cross between that species and the Crack Willow (*S. fragilis*), named *S. coerulea*, produces by far the best timber for the manufacture of high-grade cricket bats.

This is important in the cultivation of Willow trees for bat-making, as the timber sells at a higher price than that of any other tree cultivated in this country. The Cricket-bat Willow, by which name it is generally known all over England, is popularly designated in the trade the "close-barked" in order to distinguish it from the "open-barked" or Crack Willow. Some difficulty is found in determining the forms of Willow, but *S. coerulea* has a somewhat fastigate habit of growth, the main branches having an upright inclination, while the lark is of a grey or slate colour with long, usually straight, narrow fissures, closely arranged, and from which fact the term "close-barked" has been derived. The leaves have a bluish tint, are long and narrow, and covered with bluish-grey hairs on the under side, while a constant difference between the hybrid and parent is the predominance of female flowers.

Both in the Huntingdon and Crack Willow the bark fissures are usually rugged and placed much farther apart than in the hybrid. The great importance of recognising and growing for economic purposes the true variety, will be apparent when it is known that makers of cricket bats will have nothing to do with any but the true "close-barked" tree, and the English bat-maker is keen in recognising the characteristics of the timber he requires, and will pay exorbitant prices for trees of the right kind. Regarding prices of Willow timber suitable for the best class of cricket bats, these have ranged in recent years from about 4s. to upwards of 10s. per cubic foot. At Bishops Stortford, from Sir Walter Gilbey's estate, close-barked Willow, suitable for bat and toy-making, met with a ready sale and realised up to 11s. 6d. per foot. In Hertfordshire eleven trees realised the very handsome sum of £90: while £20 was refused for four trees in Essex. Such prices are, however, exceptional, and only obtained for picked timber of the highest quality, in which there is little or no waste when used in the making of first-class cricket bats. One of the largest users of Willow timber in the Metropolis informed me that the average price he had paid for several years previous to the war worked out at under 6s. per foot for wood of average quality. The home of the true Cricket-bat Willow is the Eastern English Counties, though some useful trees have of late years been picked up by dealers, within a range of twelve miles of London.

Willow timber is at present largely employed in the making of artificial limbs, no satisfactory substitute for this wood having been found, and that in spite of the fact that from three to five

years is required for seasoning. The timber is light, tough, elastic, and not inclined either to split or splinter.

For railway brakes, bottoms of carts and waggons, floats of paddle steamers, portions of water wheels, and shoemakers' cutting boards Willow timber is valuable. By artists it is esteemed for their charcoal crayons. Where teasing qualities of timber are more essential than hardness, Willow wood has perhaps no equal.

Willows for timber purposes are readily raised either from rooted cuttings or sets, the latter being the cheapest and probably the best method. The sets are usually from 12 to 20 feet long, three inches in diameter at the base and chosen from pollarded trees, straight, clean, branchless shoots being preferred.

SUB-TROPICAL GARDEN.

PERMANENT subjects of a suitable character should, where possible, predominate in the sub-tropical garden. A collection of suitable hardy species, judiciously grouped, will provide the planter with a comparatively easy task in obtaining a pleasing and somewhat different effect each season. Only a small quantity of half-hardy plants will then be needed to furnish open spaces; moreover, the resources of the glass department will not become unduly taxed. Varieties of *Acer*, *Aralia*, *Acacia*, *Bambusa*, *Gynarium*, *Hemerocallis*, *Funkia* and *Ferns* are all suitable for permanent planting. More tender species, for embellishing the garden at

PUYA CHILENSIS.

THIS plant, as its name denotes, is a native of Chili, and forms, I am told, considerable masses on the western slopes of the Andes. It is one of the most remarkable of the Pine-apple family and is exceedingly handsome when in full flower, in spite of its yellowish-green appearance. The remarkable specimen illustrated in Fig. 17 was planted in the gardens of Tresco Abbey in about the year 1845 and has been growing rapidly southward and eastwards ever since, so much so that it caused the diversion of the path several times and has long since passed the *Cordylina australis*, depicted in the background. Mercifully, the plant as it proceeds dies away in the rear, but while occasion-



FIG. 17.—PUYA CHILENSIS FLOWERING IN THE GARDENS AT TRESCO ABBEY, ISLES OF SCHILLY; THE SPECIMEN PRODUCED THIRTEEN LARGE INFLORESCENCES.

[Photo by Messrs. Gibson and Sons, Penzance.]

They may be planted when cut in Spring, or placed together in a ditch or pond for about a month, when rootlets will form. Great care is necessary in planting to prevent loosening the bark, and to avoid this a hole about 2½ feet deep is made by driving an iron rod into the ground where the set is to be planted. Considering that the Willow will grow in any but the most exposed situations and in dampish loam where only a limited number of other trees would succeed, and that it arrives at maturity at a comparatively early age and produces valuable timber, its cultivation for profit is to be recommended. A. D. Webster.

the present time include:—*Agave*, *Cycas*, *Crinum*, *Cordylina*, *Canna*, *Brugmansia*, *Palms*, *Zea*, *Musa* and *Eucalyptus*. A few plants of *Lilium auratum* and its varieties may be planted out from pots to mark prominent points, and *Caladium esculentum*, lifted and stored last November, should be planted in rich, moist soil in a somewhat shady position. Luxurious leafage should obtain in the sub-tropical garden; therefore attention should be paid to feeding and watering the roots, also to overhead spraying with soft water towards the close of warm days. A snug, warm situation will assist greatly in obtaining a free growth. L.

ally rooting afresh, it nevertheless depends on its original roots for its main subsistence while it pushes out great rhizomatose branches. These latter bear at the extremities large tufts of rigid leaves which are armed with hooked spikes turning up from the apex of the leaf to half way down and then are reversed; the whole, therefore forms an impenetrable jungle from which there is no escape. The plant flowers each year, but this year has thrown up 13 spikes, an unusually large number. A plant of *Puya chilensis* which flowered at Kew is figured in *Bot. Mag.*, t. 4715. A. G. Dorrien Smith, Tresco Abbey.

CHERMES ATTACKING TREES OF THE DOUGLAS FIR.

YOUR issue of June 26 (No. 1748, Vol. LXVII., p. 318) contains an article by Professor Henry on "Chermes Attacking Douglas Fir." Having made a study of this remarkable family of insects for a number of years, a few additional words on the subject from my pen may not seem out of place.

Chermes Cooleyi, Gillette, has appeared for a number of years in Bagley Wood, near Oxford, and became very prevalent last year (1919). The insect has this year infected a number of plants in the nurseries. One of these plants is shown in the illustration (Fig. 18) and upon it is seen the "sistens" stage, developed in the spring from hibernating larvae. It will be noted that the adult insects, each with a covering of white wool, are situated upon the old needles, where, by sucking, little damage can be effected. From the numerous eggs laid by each under the wool, minute larvae are hatching, many thousands of which have crept on to the new green shoots, the leaves of which already present an unhealthy and drooping appearance. The photograph was taken early in May.

Examined at the end of May, the majority of these larvae had disappeared, for, in process of development, they had developed wings, and flown, probably, to Sitka Spruce. These winged individuals are known as the "sexuparae." The minority of the above-mentioned larvae had secreted wool, and, as adults without wings, resembled, in general appearance, the sistentes, but had kept upon the new leaves; they are called "progredientes," which again lay eggs, the larvae from which develop again into "progredientes" or "sistentes." The latter, as larvae, hibernate till next spring, when they begin the "closed" cycle on the Douglas Fir again.

The winged sexupara forms settle on the old branches of Sitka Spruce, and there produce a sexual generation, all other generations being asexual. From this stage onwards we are as yet not quite certain of the details, and it is perhaps best to state briefly what occurs in the closely allied Chermes strobilobius, Kalt, which alternates upon Larch and Norway Spruce. Each adult sexual female lays but one egg which hatches in July into a larva which hibernates, and becomes an adult "fundatrix" in the following spring. Developing on an old and weak Spruce bud, this generation with its numerous offspring converts the bud into a "gall" into the chambers of which the latter creep and develop.

All of these individuals, after the opening of the galls in early June, become winged adults (the *Gallicola migrans*) and fly to Larch (to Douglas Fir in the case of Chermes Cooleyi). Here they lay eggs on the needles, and the resulting larvae become adult "sistentes" after hibernation, and so start the cycle afresh. In both cases the Larch and Douglas Fir respectively are termed the "intermediate host-plants." Some species of Spruce always acts as the "true host-plant," upon which the sexual generation and the gall are produced.

Different species of Chermes alternate between a Spruce as host-plant, and Larch, Douglas Fir, Scots Pine, Weymouth Pine, and Silver Fir respectively. One or two are confined to Spruce, and the generation on the intermediate hosts has been lost; in these cases the winged *Gallicola migrans* produces the "fundatrix," so that the sexual generation is also omitted.

In nurseries Professor Henry has advocated spraying with kerosene emulsion, but fumigation with cyanide cannot be too strongly recommended before planting out in the forest.

Except for one or two species with abbreviated cycles on Spruce only, the winged sexupara form of all species collect on Norway Spruce, and in one case on Sitka Spruce, in or before June, and the great majority of individuals seem to prefer only the lower branches. The illustration in Fig. 19 shows "sexuparae" of Chermes strobilobius on an old Spruce branch; from one mass of the protective woolly covering an adult sexual female is seen escaping.

Were it practicable to remove or even spray the lower branches of Spruce in June and July, these pests might easily be controlled. The former method would be preferable, for then the cut branches upon which the insects could not possibly develop, would allow of the escape of



FIG. 18.—CHERMES COOLEYI ON DOUGLAS FIR (SISTENS STAGE).

natural enemies of Chermes, in the form of Ladybirds, Hover-flies, and Spiders. It is probable that the "closed" cycles cannot go on in definitely upon the intermediate host-plants.

Damage by Chermes, however, seems only to be really serious where Conifers are planted upon



FIG. 19.—CHERMES STROBILOBIOUS ON SPRUCE (SEXUPARA STAGE).

soil which is unsuitable to them, and we could look forward to a better yield from our forests if a gleam of discrimination were exercised not only by landowners, but also by forest authorities, in the selection of sites for planting. Edward R. Speyer, New College, Oxford.

CULTURAL MEMORANDA.

THE MANURING OF GRAPES.

A VINERY which I attend regularly once a week during the growing season, and more often when thinning or manipulating is required, has ten vines—four of Black Hamburg, one of Madresfield Court, two of Muscat of Alexandria, and one each of Gros Maroc, Alicante and Foster's Seedling. Though berries of the Muscats have not always had the desired golden tint, all the vines of the Muscats of Alexandria type have borne good crops during the past ten or twelve years.

This season, two vines of Black Hamburg are faulty, some of the berries at the present time being about the size of large Peas, while others are double that size, proving that the flowers were not perfectly fertilised and that seeds are either absent or imperfect. These two vines are at the warmer end and on the eastern side of the house, which is span-roofed and shaded from the early morning sun, by trees, an advantage in these days when gardeners do not rise with the lark. The other two vines of Black Hamburg were several days later in flowering.

In the late autumn the border was enriched with lime, wood ash and steamed bone flour, and after the vines had started, I prescribed sulphate of ammonia. There was a delay of two or three weeks in procuring this fertiliser and it was applied too late for the earliest Hamburgs, but just in time for those which flowered later. Possibly another week's delay would have spoiled the whole crop. But someone will say, "I never apply sulphate of ammonia or other concentrated nitrogenous manure and yet always have good crops." There are different estimates as to what constitutes a good crop—when almost every lateral carries a bunch from 1½ lb. to 2 lbs. in weight, with berries of Black Hamburg 1½ inch in diameter and perfectly finished, it may be called a good crop, and if the soil is non-retentive, as in this case, it requires much feeding to continue the results year after year. All other food constituents may be present in abundance, but if a sufficiency of nitrates is not available at a critical time, there is likely to be a failure.

Concentrated forms of nitrogenous manures are soon exhausted or washed away in a non-retentive soil, so that to command success we need always to be on the alert in this matter. Even the best compounded artificials lose their nitrogen first, and the loss requires to be made good in order to produce the best results. I do not say it is impossible to make a lasting concentrated nitrogenous manure, but the necessary ingredients are too rare and too costly for general use.

There may be an abundance of natural manure in the border, but for growing fruit at high pressure, it is not always available sufficiently quickly at certain critical times to produce the desired effect, hence, it is always advisable to add a little quick-acting stimulant to assist flowering and stoning; and not only for what it contains in itself, but because it brings the other soil constituents more quickly into action. Thus the indirect action of nitrogenous fertilisers may be of very great value.

Sulphate of ammonia is suitable for this purpose if applied a month before it is likely to be wanted. Nitrate of soda, or nitrate of potash (saltpetre) are quicker in action, when there has been some delay, but not so lasting, and need replenishing in a month's time. The dressing of either of these should not exceed one pound to the perch at one application. Even when a so-called complete fertiliser is applied, it is advisable to supplement it with a small dose of one of the above nitrogenous manures once or twice before colouring commences. The size of a berry, all other conditions being favourable, depends on the number of fully developed seeds it contains. Those berries which have four seeds are the most perfect (berries with five or six seeds are usually large, but ugly in shape), and perfect seeds depend on perfect fertilisation. Wm. Taylor.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Timber of Westminster Hall.—With reference to the highly interesting article (see p. 6) by Mr. A. D. Webster, in your issue of July 3, may I be allowed to add something? Oxmorton, from which the timber of the original roof of Westminster Hall was obtained (1095), is the site in Dublin of the King's College or Blue Coat School for boys, founded by Charles II. In early times Dublin city was altogether on the south-side of the River Liffey. Hammer, in the *History of Ireland* (1633) states that "Smithfield Cattle market was part of Oxmorton, set apart in reign of Charles II, and the woods." It would be curious to ascertain to what this refers, as it is known that originally vast forests of Oak covered the land on which Smithfield market now stands. *J. C. Wilson, Keston, Kent.*

Selection of Seed Potatoes.—Under this heading (on p. 10) an important piece of advice is given to mark rogues amongst Potatoes, where the intention is to save seed. This is important from several points of view. In districts infected with wart disease, only immune varieties should be grown. I have seen the old Myatt's Prolific Ashleaf very much mixed with a later variety, which would be a distinct loss to the grower when dug early. Quite recently I was inspecting a plantation of Potatoes in a large and important garden, and pointed out two or three rogues in a line, when I was informed that they were the variety according to name, and all the rest were rogues. Sometimes a few plants appear to be rogues, but may have got rust, though quite true to name. These, as well as those which have curled leaves should also be marked while still quite green and recognisable. The tubers carry disease in them, and are more or less worthless for cropping the following year. I have pulled up stems that were black below the soil, as early as May. This year the copious rains prolonged the growth of Potatoes affected with leaf curl, but some plants of Duke of York showed unmistakable signs of distress before the end of June, when the base of the stem was completely decayed. *J. F.*

Richardias Out of Doors.—I enclose a photograph of a group of Arum Lilies (*Richardias*) growing in the Countess of Bandon's Gardens (see Fig. 20), which I think compares favourably with the group illustrated in your issue of June 26. Previous to taking the photograph several hundred blooms had been cut from the plot, and others are still being cut in large numbers. It is a very prolific plot and also provides a very pleasing border effect. *P. Harper, Castle Bernard, Bandon, Co. Cork.*

Salvia Sclarea.—The two spikes of *Salvia Sclarea* enclosed were grown from seeds collected by myself in Macedonia two years ago, whilst serving with the Salonica Army. I believe the species is *S. Sclarea*. I raised thirteen plants and planted them in the wild garden here; they are now carrying about a hundred spikes and make a pleasing picture. The plants are finer in growth than any I saw abroad. The spikes sent are average-sized ones; unfortunately I have had to cut each of them in halves to pack them in the box. *R. Scott, Franks, Horton Kirby, Kent.*

[The spikes were unusually fine, and we can quite understand that a group of one hundred makes a brave show.—EDS.]

Potato Ringleader.—I have not the date by me of the introduction of Ringleader Potato by Messrs. Sutton and Sons, but it must be nearly thirty years since they put the variety in commerce. It is still a favourite with certain growers. I pinned my faith to it as a high quality, early variety for many years, and shall hope to grow it again, especially after what I have seen of it quite recently. An enthusiastic cottage gardener in this village planted a few small tubers in his garden twenty-seven years ago, and so highly impressed was he with the results that he has grown it ever since without a change of seed, with the greatest success. As showing the all-round good quality of the

variety, this cultivator depends upon the produce for supplying his family all the year round. He does not grow a late variety, and he finds the cooking quality of Ringleader as good in March as at any other time. Without affording any special protection, he never fails to lift the first part of the crop during the second week in June, and usually by the last week in May he has dug several roots. We are generally advised to procure new seed at least every second year, but Mr. Palmer has not once changed his seed for twenty-seven years; the tubers he grows are large enough for any purpose, and certainly their quality is excellent. *E. Molyneux, Bishops Waltham.*

Peach Curl.—This disease of the Peach is very prevalent in gardens this season, especially in the west. Trees on walls are severely crippled by the fungus, indeed, so badly are the plants affected, many seem to be permanently ruined and will need to be grubbed up and replaced by fresh specimens. The precocious spring was largely responsible, for whilst the days were warm, the nights were unusually cold, with the result that the plants suffered a severe check and fell an easy prey to the fungus. It would be interesting to know of a reliable specific for this troublesome complaint. *Pontica.*



FIG. 20.—RICHARDIAS IN THE OPEN AT CASTLE BERNARD GARDENS, BANDON.

Budding Roses.—Generally, speaking, the most satisfactory way of increasing Roses is by budding. In selecting dwarf stocks, the ordinary hedgerow Brier should be chosen. Seedlings of this Brier resist drought more successfully than Brier-cuttings; however, the latter respond readily to surface feeding as the roots have not the same tendency to grow downwards as those of the seedling Brier. All stocks should be thoroughly soaked with water previous to budding them, to ensure the bark parting freely from the wood when the knife-haft is inserted. The soil used for earthing up dwarf stocks may be carefully removed from a given quantity as required; clean the main stem of prickles by the use of an old glove and make a T-shaped slit in it low down, in which to insert the bud. Moderately plump buds taken from half-ripened wood should be firmly tied in, and a fortnight hence the ties may be undone and retied somewhat loosely. In the case of tall standard stocks, a long, single slit is preferable, as the traverse cut may ultimately cause the shoot to snap under pressure by high winds. Do not curtail the budded shoots of the Brier until November, when they may be shortened according to vigour. *S.*

Two Useful Senecios.—*Senecio grandifolius* and *S. Petasites* are Mexican Groundsels with large, handsome foliage; they also possess considerable merit as flowering subjects for the conservatory. If rooted now the latter makes a useful flowering plant for the greenhouse stage during early spring. Where large specimens are required plants rooted some six weeks ago will now require repotting. They are both strong growing plants, and need large pots. *Foreman.*

SOCIETIES.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

The annual festival dinner of the Gardeners' Royal Benevolent Institution, the 77th of the series, was held on the 29th ult., in the Grocers' Hall, Princes Street, City. The occasion was noteworthy by the fact that His Royal Highness the Duke of Connaught occupied the chair and the large sum of £3,200 was contributed at and in consequence of the dinner. The company numbered some 200, and the beautiful hall of this important City Company lent itself to the success of the gathering.

Amongst the guests we noticed many prominent horticulturists, including The Rt. Hon. Lord Lambourne, Sir Harry J. Veitch, Sir Jeremiah and Lady Colman, Mr. W. R. Dykes, Mr. and Mrs. Edward White, Mr. and Mrs. W. A. Binley, Rev. Canon and Mrs. Sheppard, Rev. Joseph Jacob, Mr. Edward Sherwood, Mr. Raymond Rochford, Mr. J. P. Rochford, Mr. W. G. Lobjoit, Mr. and Mrs. G. H. Barr, Mr. and Mrs. J. W. H. Barr, Mr. Peter Barr, Major E. G. Monro, Mr. and Mrs. Geo. Monro, Mr. Owen Thomas, Mr. James Hudson, Mr. G. H. Cuthbert, Mr. George Paul, Mr. and Mrs. C. H. Curtis, Mr. J. O'Brien and Mr. J. F. McLeod.

The Duke of Connaught, in submitting the toast of the evening, that of "The Royal Gardeners' Benevolent Institution," stated that he proposed to give a few statistics relating to the Institution which he considered would prove the necessity for their presence that evening, and would, he hoped, result in help forthcoming to carry on the splendid work. There were 260 annuitants and a waiting list of 24, those on the latter being assisted by grants from a special fund. The sum of £6,000 per year was required to carry on the charity, but the assured income was less than a thousand pounds. He hoped that this statement would show what is required to be done and how dependent the Institution is on the generosity of the public. There is no country in the world where gardens take so prominent a part in the amenities of the people, as in Great Britain, and it is to the professional gardeners that we are largely indebted for these beautiful gardens. The tastes and the initiation might possibly have been given by those who were not gardeners by profession, but who were those who carried them out? Surely they were the gardeners of this country. The gardener needs to exercise incessant care and thought in his charge, and he has to face every kind of weather in the fulfilling of his duties. Although it is largely a work of love, gardening necessitates a tremendous amount of exposure and constant care. Many of them were great lovers of gardens. No one had a greater affection for nature and for the beauties that the garden could produce than himself. It is most gratifying that after four years of war we should be enabled to show such magnificent results in horticulture as were forthcoming at the recent Chelsea exhibition. When we look back on the terrible war, horticulturists must feel proud of the fact that large numbers of gardeners came forward to assist their country, and he regretted many fell in their country's honour. He appealed to all present to contribute the necessary funds to carry on the work of this admirable institution. He congratulated the Hon. Treasurer, Sir Harry J. Veitch, on the 80th anniversary of his birth. He did not suppose any gardener in England was better known or more respected, and they would drink his health with a double warmth and wish him many happy returns of the day to one who had been treasurer of the Institution for 34 years.

Sir Harry J. Veitch, who responded, thanked His Royal Highness for his kind remarks and reminded him that it was not the first time that he had presided over a festival dinner of the Institution. The former occasion was many years ago, when the total number of pensioners was only 259, and now there were more than 259 on the fund each year. On that occasion they were only able to elect seven pensioners; last year 26 indigent persons had been placed on

the funds. Sir Harry stated that at the first dinner, when some 30 persons were present, the subscriptions totalled £50. He then proceeded to give some particulars of the oldest pensioners, four of whom were over 90 years of age and 69 of them between 80 and 90. Their oldest pensioner had been on the fund for some 27 years. Altogether the charity has distributed £170,000 in benefits. He was proud to have been the hon. treasurer for 34 years and he was in a position to know that the Institution was worked in a very economical manner, there being no paid officer except the secretary. He referred to the excellent assistance given by the local auxiliaries and he hoped that these valuable adjuncts of the Institution would be largely increased in numbers. During the past year they had lost many valued supporters and he would specially mention the late Mr. George Monro, who not only attended meetings most regularly, but had given most liberally. He was pleased to know that Mrs. Monro and her three sons had declared their intention of setting aside the sum of £2,000 to found a fund in memory of the late Mr. George Monro, to benefit the candidates who were awaiting election. He thanked the Master and the members of the Grocers' Company for their great kindness in lending the beautiful hall for their meeting.

The toast of "The Visitors" was proposed by Sir Jeremiah Colman and responded to by Mr. Roger Gregory, Master of the Grocers' Company.

The health of the Chairman was proposed by Lord Lambourne. He stated that he had known the Chairman for 52 years, when they both pursued the fox in his native county of Essex. To capture public popularity was almost as difficult as capturing the fox, but he congratulated His Royal Highness on having been capable of capturing both. He was glad to know that the Institution was honoured by the presence of a son of the illustrious Queen-Victoria.

At this stage of the proceedings the Hon. Secretary, Mr. George Ingram, stated that, including a gracious contribution from the Chairman, the gross amount collected was £3,200.

CITY OF LONDON ROSE.

JULY 8.—The sixth annual exhibition, held on this date at the Cannon Street Hotel, was a successful one so far as the flowers were concerned, but the weather was atrocious. Competition throughout the numerous classes was fairly good, but in many instances otherwise excellent flowers showed the effects of the recent unkind weather. There was a good attendance of visitors, and the exhibition was opened by the Lady Mayoress.

Messrs. D. PRIOR AND SONS were particularly successful in the nurserymen's classes, and their specimen of George Dickson obtained the silver medal offered for the best H.T. Rose in the section. Messrs. ALEX. DICKSON AND SONS were also successful, and their five baskets of Roses proved a great attraction, the varieties being Sunstar, Elizabeth Cullen, Mrs. C. V. Howarth, Hawlmark Crimson and Irish Afterglow.

Mr. F. DENNISON, Leamington, won the Amateurs' Challenge Cup with a capital lot of flowers, which included good specimens of Mabel Drew, Lady Ashtown, British Queen and Candeur Lyonnaise. Mr. J. HART, Potters Bar, won the City of London Challenge Trophy and also a silver medal for his bloom of Maman Cochet. A Challenge Cup also fell to Mr. H. R. WETTER, Oxted, for nine vases of garden Roses. Mr. E. V. MOORE, High Wycombe, obtained a silver medal for his bloom of George Dickson. Other successful prize-winners in the amateurs' classes were Rev. R. F. BURNISSE, Great Stanbridge; Mr. H. CRAYDON, Bishops Stortford; Mr. M. H. WARD, Epsom; Mr. F. GEORGE, Worcester; Mr. GORDON CLARK, Leatherhead; Mr. A. WILKINSON, Pinney; and Mr. A. N. ROGERS, East Putney. In the ladies' classes, Mrs. F. G. UNDERHILL and Mrs. H. STRAKER were successful competitors.

A very interesting feature of the exhibition was provided by the "Insurance Classes," open only to employees in insurance companies. Members of three companies competed on this, the first occasion, with the result that the Challenge Cup offered by Sir Edward Mountain was won by THE EAGLE, STAR AND BRITISH DOMINION COMPANY, with thirteen points; the PRUDENTIAL COMPANY coming second with eleven points; and the PHOENIX COMPANY third, with six points. Mr. S. E. TATTERSHALL secured two first prizes for the winning company.

The Rev. J. H. PEMBERTON, Mr. F. W. FRANKS, Messrs. J. CHEAL AND SONS and Messrs. CARTER, PAGE AND CO. contributed non-competitive exhibits.

FORMEY HORTICULTURAL.

JULY 10.—The annual exhibition of this Society was held in the Parish Hall, with most satisfactory results, the entries being considerably above those of last year, and the quality, with the exception of the vegetable section, a decided improvement.

As usual, the classes devoted to Roses provided the chief attraction. Twelve cups were offered as prizes, and the competition was good. For twelve blooms, distinct varieties, Mr. MALCOLM ROLLS held the position of honour, having excellent blooms of H. V. Machin, Lyon Rose, Juliet and Richmond; Mr. PAUL LAYTON and Sir THOMAS T. SHANN obtained the remaining awards. For twelve blooms, in six varieties, Messrs. MALCOLM ROLLS, T. LUNT and WILFRED HEYWORTH were placed as named, staging blooms of fair size and good form. For twelve blooms, in four varieties, Mr. THOMAS LUNT took the lead, and for six distinct varieties, the prize-winners were Messrs. P. H. MOSELEY, JOSHUA REA and PAUL LAYTON. For six light-coloured blooms in three varieties the awards went to Mr. P. H. MOSELEY and Mr. JOSHUA REA. For six dark blooms, and for six blooms in three varieties, Mr. P. H. MOSELEY held the leading position; while for six blooms of one variety Mr. THOMAS LUNT won with beautiful specimens of George Dickson; followed by Mr. LOO THOMSON.

In the section for smaller growers, Mr. LOO THOMSON led for six dark blooms, with George Dickson; he was also first for (a) six light blooms, in not fewer than three varieties, (b) for six distinct varieties, (c) for six blooms (open to both sections), (d) for a vase of five blooms and (e) a vase of cluster Roses. The National Rose Society's Medal for the best bloom went to Mr. P. H. MOSELEY for a large specimen of George Dickson.

Sweet Peas were next in importance to Roses. For twelve bunches, Mr. F. ANDOW obtained the premier position with an excellent set, the best sorts being Royal Salute, King Manoel, Elegance, Hercules and Edna May. For nine vases Mr. E. TOMLINSON took the lead, with Mr. F. G. ANDOW second. For six bunches, Mr. G. GLASGOW led.

Mr. ROBT. HOEHN, Mr. H. LUNT, and Mr. MALCOLM ROLLS were prize-winners in the classes for Begonias. For twelve bunches and also for six bunches of Violas, Sir THOS. T. SHANN won first prize. Mrs. HELEN MAWDSLEY and Mr. JAS. GOLBOURNE were successful with hardy flowers.

Messrs. ALEX. DICKSON AND SONS, Newtownards, staged a grand collection of exhibition Roses (Gold Medal), and a similar award went to the GARDEN SUPPLIES CO. for a collection of Sweet Peas. Mr. ROBERT WRIGHT contributed a stand of Sweet Peas, whilst Mr. ROBERT HOEHN showed a splendid lot of cut Begonias.

NORTHAMPTON MUNICIPAL HORTICULTURAL.

JULY 8.—A very successful flower show was held by this Society in Abington Park, Northampton. The principal subjects were Roses and Sweet Peas, for which competitive classes were provided. The Mayor (Councillor F. Kilby) presided at the opening ceremony, and he was accompanied by the Mayoress. Unfortunately the weather was unfavourable, and rain had fallen almost continually for a week before the

date of the exhibition. The sum of £100 was offered in prizes.

The principal class for Rosés was for 24 blooms, distinct, and Mr. G. SPEIGHT, Market Harborough, won the first prize; his exhibit contained the best bloom in the show, for which a silver medal was offered. Mr. NICHOLSON, Market Harborough, showed the best exhibit of twelve blooms, distinct, open to growers of fewer than 500 plants.

In the class open only to amateurs, residing within a radius of 20 miles of the town, for twelve blooms, distinct, Mr. W. G. BAMBRIDGE, Kettering, was successful; whilst for nine blooms, distinct, Mr. T. D. WREN, Northampton, was awarded the first prize. A bronze medal offered for the best Rose grown by an amateur, cottager or allotment holder, residing within a 5-mile radius of Northampton, was won by Mr. C. DUFFIELD.

The exhibits of Sweet Peas were especially meritorious, and these flowers had suffered less from the effects of the weather than the Roses. In an open class for twelve vases of distinct varieties, the first prize was won by the NORTHAMPTON TECHNICAL SCHOOL GARDENING CLASS. Mr. R. S. HENSHAW, Wellingborough, showed the best six vases, distinct, and he had also the best vase of (a) a white variety, (b) an orange variety, (c) scarlet or crimson variety, and (d) of a lavender or pale blue variety. Mr. C. KITCHENER, Olney, won the first prize for a vase of blush or pink varieties, and he was second to Mr. HENSHAW in the other coloured classes enumerated. In the amateurs' classes, Mr. HENSHAW, Mr. BUSTIN and Mr. B. LAWMAN were prominent prize-winners.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JUNE 10.—Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, D. A. Cowan, J. Howes, Dr. R. N. Hartley, A. Keeling, D. McLeod, E. Tack, J. Thrower, E. W. Thompson, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum Corona magnificum (Doris magnificum × ardentissimum), a fine, heavily blotched (chocolate brown) variety; *Odm. crispum* var. *She*, a grand crispum of the Pachio type, carrying a spike of nine large flowers; *Odm. crispum xanthotes* *Bestyellow*, probably the finest and most heavily spotted variety of xanthotes, from P. SMITH, Esq.

Laelio-Cattleya J. P. Birkbeck var. *Leviathan*, a large flower of perfect shape, from S. GRATRIN, Esq.

AWARDS OF MERIT.

Dendrobium crystallinum album; *Odontoglossum Lecanum* var. *Dusky Maid*; *Odontoglossum crispum* var. *Courage*; and *Laelio-Cattleya Tenebra gloriosa* (L.C. Martinetii × C. Mossiae), from S. GRATRIN, Esq.

Odontoglossum Jasper var. *Sunbeam*; *Odontoglossum majesticum* var. *giganteum*; *Odontodia Bridesmaid* var. *Dora*, from P. SMITH, Esq.

AWARDS OF APPRECIATION.

Odontoglossum crispum var. *Spion Kop* (1st class), from P. SMITH, Esq.

Cypripedium Govecranium *Gratixianum* (Lawrenceanum Hyeaunum × Curtisi Sanderae), from S. GRATRIN, Esq.

GROUPS.

A large Silver Medal was awarded to S. GRATRIN, Esq., Whalley Range (gr. Mr. J. Howes), and a silver medal to P. SMITH, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson) for groups.

At a meeting held on Thursday, June 24, the members of Committee present were:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, A. Hanmer, J. Howes, A. Keeling, D. McLeod, Dr. F. T. Paul, E. W. Thompson, and H. Arthur (Secretary).

AWARDS.

FIRST-CLASS CERTIFICATE.

Cypripedium Greyii Haddon House var. (Godefroyae × niveum), quite the best of the type seen in the North; from P. SMITH, Esq.

AWARDS OF MERIT.

Miltonia Bleuana Pitt's var., from Mrs. BRUCE and Miss WRIGLEY.

Odontioda dilectissimum (tripudians × Vuylstekei), from P. SMITH, Esq.

Odontoglossum crispum var Viking, from S. GRATRIX, Esq.

Odontioda Alcantara rotundum (Oda. Cooksonia × Odm. eximium), from Messrs. KEELING AND SONS.

AWARDS OF APPRECIATION.

Laelio-Cattleya Shogun var. rubra (tenebrosa × Martinetii) (1st class), from Capt. W. HORRIDGE.

Odontioda Laura (Brewii × Coronation) (1st class), from Messrs. J. COWAN AND CO.

ROYAL HORTICULTURAL.

JULY 13.—The exhibition was a very small one on this date, and even the addition of the National Carnation Society's competitive classes did not suffice to bring the extent of the exhibition up to the average. Few novelties were forthcoming. Visitors came in fair numbers and included many who specialise in border Carnations.

FLORAL COMMITTEE.

Present: Messrs. H. B. May (in the chair), W. J. Bean, Sydney Morris, G. Reuthe, John Heal, Clarence Elliott, W. Howe, Andrew Ireland, J. F. McLeod, J. Jennings, John Green, Arthur Turner, H. J. Jones, C. F. Hazelton, Chas. E. Pearson, J. T. Bennett Poë, W. P. Thomson, E. H. Jenkins, C. Dixon, C. R. Fielder, George Paul, W. A. Bilney, W. R. Dykes, A. G. Jackson, J. W. Barr, W. B. Cranfield, R. C. Notcutt, Jas. Hudson, E. A. Bowles, and H. Cowley.

Novelties.

AWARDS OF MERIT.

Carnation Mrs. T. Ives.—A beautiful perpetual variety of the loveliest pink shade imaginable, with a number of very minute dots of red, almost like dust. The flowers are of good size and substance, with wavy petals, a sound calyx and a long, stiff stem. Shown by Messrs. STUART LOW AND CO.

Sidalcea Rose Queen.—A fine border plant growing about four feet high. The freely branched stems make up a narrowly pyramidal inflorescence well furnished with deep rose-coloured flowers, each about an inch in diameter. Shown by Mr. W. WELLS, Junr.

Eurothera biennis Golden Glow.—A robust and otherwise glorified form of a well-known garden plant. Shown by Messrs. B. LADHAMS.

GROUPS.

Hybrids of *Gladiolus primulus* shown by Major CHURCHER, Alverstoke, exhibited considerable variation of colour, but in some varieties the character of *G. primulus* was more or less lost—a great disadvantage. Fire-fly, scarlet, Arlon, apricot, and Zenobia, soft orange flame, were three lovely forms of true character (Silver Banksian Medal). Messrs. ALLWOOD BROS. exhibited a delightful group of perpetual Carnations with vases of varieties of *Dianthus Allwoodii*. Edward Allwood, the new scarlet perpetual Carnation to be sent out next season, was finely shown (Silver Flora Medal).

Messrs. B. LADHAMS, LTD., made a feature of *Eurothera Golden Glow*, a large-flowered variety, in their exhibit of hardy flowers. *Lavatera Olbia rosea* was also shown extensively by this firm (Bronze Flora Medal). Mr. G. REUTHE showed a number of very interesting hardy plants, including *Dierama pulcherrima*, *Veratrum nigrum*, *Ixia*, and *Calycanthus occidentalis* (Silver Grenfell Medal).

Mr. MAURICE PRICHARD contributed an imposing display of hardy flowers, and showed a great variety of subjects, including *Stenan-*

thium robustum, the scarlet-flowered *Verbena chamaedrys*, coloured *Astilbes*, *Nepeta okranica*, and a collection of *Phloxes* (Silver Grenfell Medal). Mr. W. WELLS, Junr., showed an interesting set of hardy plants, wherein *Oxalis valdiviensis*, gorgeously coloured *Mimuli*, and the new, tall, rosy-flowered *Sidalcea Rose Queen* were conspicuous plants (Bronze Flora Medal).

A pretty exhibit of perpetual flowering Carnations was set up by Mr. C. ENGELMANN, whose vases of *Iona*, *Circe* and *Sunstar* were splendid (Silver Banksian Medal). *Fuchsias*, *Heliotropes*, *Verbenas*, *Ferns* and *Plumbago capensis* were grouped by Messrs. H. B. MAY AND SONS (Silver Banksian Medal); and Messrs. JOHN PEED AND SONS exhibited a group of *Clematites*, which attracted a great deal of attention; the varieties *Lady C. Neville*, *Lady Boville* and *Nellie Moser* were splendidly flowered (Silver Grenfell Medal).

The Rev. J. H. PEMBERTON was the only exhibitor of *Roses*—the leading varieties of his own raising were *Mermaid*, *Prosperity*, *Kathleen*, *Vanity*, *Francesca*, and the ever-blooming *Pax* (Silver Banksian Medal). Mr. JAS. DOUGLAS'S Border Carnations were much admired, especially the varieties *Orangeman*, *Border Yellow*, *Surrey Clove*, *Blush Clove*, and *Elizabeth Shiffner*.

Mr. W. MILLER was an exhibitor of hardy flowers (Bronze Banksian Medal), and so were the Misses HOPKINS. Messrs. CHEAL AND SONS contributed *Nymphaeas* and hardy flowers (Silver Banksian Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair, Sir Harry J. Veitch, Sir F. W. Moore, Jas. O'Brien (hon. Secretary), Arthur Dye, C. J. Lucas, Walter Cobb, J. E. Shill, Fred. K. Sander, Chas. H. Curtis, and Pantia Ralli.

AWARDS.

AWARD OF MERIT.

Cattleya Hesperus (*Hardyana* × *Enid*) from BARON BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill). A very handsome and perfectly-formed *Cattleya* embodying all the good qualities of its parents. Sepals and petals over seven inches across; silver-white tinged and beautifully veined with rosy-mauve. Lip broad, deep claret-red, with the yellow centre of *C. Warszewiczii*, and gold lines from the base inherited from *C. Dowiana aurea*.

Odontoglossum Eldorado (*eximium* × *Lakiniae*), from W. R. FASEY Esq., Holly Bush Hill, Snaresbrook (gr., Mr. E. J. Seymour). A charming *Odontoglossum* in which the fine *O. Lakiniae*, of unrecorded parentage, is well shown, and a model in size and shape. Flower four and a half inches across; white, with large violet-purple blotches on the sepals, and a very pretty arrangement of smaller, violet-purple blotches on the petals. Lip broad, pure white in front and with some deep purple blotches in front of the yellow crest.

Vuylstekeara 'Brewii' (*Odontioda Brewii* × *Miltonia vexillaria*), from Messrs. CHARLESWORTH AND CO. *Odontioda Brewii* (Oda. Charlesworth × Odm. Harryannum) is the darkest of the *Odontiodas*, and its nearly black sepals and petals take effect in the hybrid which has dark ruby-red sepals. Lip, showing the *Miltonia* parent; white ground, closely veined and tinged with rosy-mauve, the yellow crest indicating the Odm. Harryannum in Oda. Charlesworthii *Vuylstekeara* embodies *Cochloda*, *Odontoglossum* and *Miltonia* and is a distinct success for the hybridist.

Odontonia Bedfordiae (*Miltonia Bleuana* × Odm. *amabile splendens*) from Messrs. CHARLESWORTH AND CO. A very pretty and interesting cross, in which the features of its several ancestors can be traced, the pretty new hybrid being quite intermediate. *M. vexillaria* gives size and form to the lip and modifies the other segments. Sepals and petals ovate-acuminate, white, with the basal halves delicately marked with violet. Lip white with radiating spotted lines featuring the mask of *Miltonia*.

OTHER EXHIBITS.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood) showed a fine plant of *Bulbophyllum macrobulbon* J. J. Smith, known in

gardens as *B. Balfourianum*; *Cirrhopetalum Mastersianum*, *Miltonia vexillaria* the Rev. W. Wilks, and Queen Alexandra.

Baron BRUNO SCHRÖDER showed a fine spike of *Sophrro-Cattleya Faboris* the Dell variety.

Messrs. CHARLESWORTH considerably showed the species from which the hybrids which secured awards were obtained; also a fine *Miltoniada Harwoodii*.

G. W. BIRD, Esq., The Manor House, West Wickham (gr. Mr. H. Redden) sent *Odontioda Sensation* var. *Empress Eugenie*; *Odontioda Rufus*; and *Odontioda Vesper* of unrecorded parentage, a charming flower, with pale lilac margins and pale reddish veining on primrose ground.

Messrs. FLORY AND BLACK, Slough, showed *Disa Italia* (Blackii × *grandiflora*), a near ally of the best form of *D. grandiflora*; and a fine dark hybrid *Odontoglossum*.

Fruit and Vegetable Committee.

PRESENT:—Messrs. C. G. A. Nix (chairman), J. Cheal, Geo. F. Tinley, Ed. Beckett, W. Pope, W. E. Humphreys, H. Markham, W. J. Jefferies, F. Perkins, W. Bates, W. H. Bates, W. H. Divers, A. W. Metcalfe, A. D. Tuckett, W. Wilks, J. C. Allgrove, and J. G. Weston.

A new Raspberry named *Binfeld Seedling* was submitted for award. It was found as a chance seedling in the hardy flower border, and when transferred to rich ground developed canes some 7 feet in height. The variety has a relatively small "core," and had the appearance of travelling well in transit. Shown by Mr. C. E. Powell, The Little House, Binfeld who was asked to send plants for trial in the Wisley Gardens.

NATIONAL CARNATION AND PICOTEE.

JULY 13.—The annual show of this society, which was held in conjunction with the R.H.S. fortnightly meeting, was very successful so far as the quality of the exhibits is concerned, for nearly all the blooms reached a high state of excellence. The old style of exhibiting the florists' flowers with a cardboard collar supporting it on a board seems, happily, to be practically a thing of the past. It is, indeed, a method not to be recommended, and in the phraseology of the ancient Counts Leet, "we present that it is not good and laudable, and should not be continued." On the present occasion four classes were arranged for blooms on cards, and these brought forward only one exhibitor, Mr. J. J. KEEN, who had collections in two of the classes.

FIRST-CLASS CERTIFICATE.

Mrs Donald McDonald. A strikingly hand some border Carnation of large size and perfect form. The ground colour is a sparkling lavender-grey, and this is brightened by unusually regular rose flaking. Shown by Mr. JAMES DOUGLAS.

OPEN CLASSES.

All the flowers in these seven classes were shown in vases. Mr. R. MORTON, Woodside Park, was the only exhibitor of six varieties of *Bizarres* and *Flakes* and six white ground *Picotees*, and was awarded the 1st prize in both classes. In the first class he had good specimens of *Gordon Lewis*, *Master Fred*, and *William Skirving*, while of his *Picotees*, *Mrs. Hammond*, *Ganymede* and *Silas Osbaldestone* were particularly fine examples. He also won first prize in the extra class, which required three vases of selfs, fancies or yellow ground *Picotees*, where he included beautiful blooms of *Daisy Walker* and *Peach Blossom*.

Mr. JAMES DOUGLAS, Great Bookham, won the remaining four first prizes with splendid blooms. Of his selfs, *Fujiyama*, *Bookham Rose*, and *Bookham Clove* were particularly handsome. Amongst the fancies we especially noted *Linkman*, *Mrs. Donald McDonald*, *Edenside*, *Cyclops* and *Mrs. Hawkshill*. Of the yellow-ground *Picotees* we admired *Mrs. J. J. Keen*, *Eclipse*, and *Her Majesty* were the very best. Mr. R. MORTON was second in most of these classes.

The Cartwright Cup, offered for the highest aggregate number of points, was won by Mr. J. DOUGLAS.

AMATEURS' CLASSES.

Competition was more varied in these classes, though there is still room for new competitors. The Martin Smith Memorial Cup was won by Miss SHIFFNER, whose chief successes were first prizes for (a) three fancies, (b) three yellow-ground Picotees, (c) one buff or terra-cotta self, (d) one red self, and (e) one dark red self, of which she showed most praiseworthy specimens.

Mr. J. J. KEEN, Southampton, won first prizes for three bizarres or flakes and three white-ground Picotees.

Mr. J. FAIRLIE, Acton, had the best vase of white selfs, of any other variety self, and three fancies.

In the division for amateurs who grow fewer than 300 plants the Edmund Cartwright Cup was won by Mr. E. W. PAINTER, Brentford, who had particularly good selfs, fancies and Picotees.

The ten colour classes, which required six blooms each of distinct colours of Carnations or Picotees, contained excellent blooms, nearly all by Mr. JAMES DOUGLAS, who was awarded all the first prizes. His outstanding varieties of Carnations were Bookham Rose, Bookham Clove, Albion, Glamour, and Fujiyama; while of the Picotees, Eclipse, Pasquin and Her Majesty were all very charming.

PREMIER BLOOMS.

Mr. J. DOUGLAS was awarded premier prizes for Bookham Rose (self), Pasquin (yellow-ground fancy), Mrs. J. J. Keen (heavy-edge yellow-ground Picotee), and Mrs. G. Murray (white-ground fancy).

Mr. MORTON won premier prizes with Master Fred (bizarre), Gordon Lewis (flake), and Mrs. Hammond (white-ground Picotee). With Onward, Miss SHIFFNER had the premier light edged yellow-ground Picotee.

Obituary.

Samuel Kidley.—Few gardeners were better known in the Reading district than Mr. Samuel Kidley, who passed away on Sunday, July 4, at the home of his youngest son, Mr. A. Kidley, at Pentrych, South Wales. The deceased, who had reached the age of three score and ten years, was gardener at Mynehead Court for about twenty years and a successful exhibitor at the leading flower shows. He was fond of conducting experiments and succeeded in raising several new plants. On leaving Mynehead Mr. Kidley went to Chipley, and afterwards to Welington. Since then he had been gardener to the Hon. A. H. Mills, at Mapledurham, near Reading. Some two months ago he went on a visit to his son at Pentrych, and whilst there he was taken ill and died. He leaves a widow and three grown-up sons and three daughters, with whom much sympathy is felt. W. H.

TRADE NOTE.

The Ministry of Labour has issued a Draft Special Order made in pursuance of Section One of the Trade Boards Act, 1918, making The Trade Boards Acts, 1909 and 1918, apply to the Fruit, Flower and Vegetable Distributive Trade.

The following sections are included in the appendix to the Order citing those to whom the Order applies:—The wholesale or retail sale for use or consumption off the premises of any one or more of the commodities specified in the schedule or in connection with any establishment or business or branch or department in which such sale is the main or principal business of the establishment or business or branch or department; the sale or hire of growing plants, when such sale or hire is transacted in or in association with an establishment or business or branch or department of the kind specified; the designing or making of wreaths, bouquets or similar articles from natural or artificial flowers, the preparation of fancy baskets of artificial flowers or raw fruit or the executing of decorations with natural flowers, foliage or growing plants.

ANSWERS TO CORRESPONDENTS.

BLACKBERRY AND LOGANBERRY SEEDS: W. E. Allow the fruits to become thoroughly ripe and then place them in a hair or similarly fine sieve, and wash away the pulp by gently rubbing the fruits while water from a tap falls upon them. When washed clean, spread out the seeds to dry. Sow half the quantity at once and the other half in gentle heat in early spring. The seeds need only a mere covering of soil.

CAMPANULATE FOXGLOVE FLOWER: B. E. In certain strains of Foxglove the terminal flower on almost every spike is campanulate and more or less erect; you will gather from this that the production of terminal regular flowers is by no means uncommon. The plants producing such flowers are not in any degree related to the Campanula.

CANTERBURY BELL DISEASED: W. C. Wrong cultural treatment is probably the cause of the damage; no fungus developed on the very poor material sent for investigation.

DIGGING: E. P. W. The question is obscure; if by left-handed it is meant that the digging is done on the left-hand side of the operator, then the spade will be pushed in by the left foot.

EELWORM IN STRAWBERRY PLANTS: C. T. Eelworms are the cause of the trouble. Burn all infected plants; obtain clean stock from a reliable source and do not again plant Strawberries on the ground in which the diseased plants are now growing.

LAUREL BRANCHES DYING: E. P. D. There is no evidence to show the cause of the trouble; probably the seat of injury is in a lower part of the plants than that from which specimens were taken.

MARKET WEIGHTS OF VEGETABLES: R. A. The approximate weights per bushel are as follows: Peas, 30 lbs. to 36 lbs.; Broad Beans, 30 lbs. to 36 lbs.; Dwarf Beans, 36 lbs. to 40 lbs.; Scarlet Runners, 36 lbs. to 40 lbs.

MONTERETII UNHEALTHY: N. M. The plants are attacked by the fungus Botrytis. Remove all rubbish and dead portions of the plants, and burn them; use hygienic measures generally.

NURSERY STOCK: G. X. R. We know of no work dealing exclusively with the propagation and handling of nursery stock in a young state, though there is certainly room for one. There are many books in which the principles of propagation are dealt with in considerable detail, but the handling of the plants afterwards, especially in large quantities, is either not dealt with at all, or is only mentioned in a casual manner. To our mind propagation and the care of the young stock are closely allied subjects, as it seems to be of little use to raise plants in quantity, and lack the knowledge to deal with them most economically afterwards.

NAMES OF PLANTS: J. B. *Celtis occidentalis* (Hackberry). A. E.: 1. *Cimicifuga racemosa*; 2. *Alstroemeria aurantiaca*. R. L.: 1. *Laelia purpurata*; 2. *Odontoglossum cordatum*; 3. *Mesembryanthemum crystallinum*. R. S.: *Salvia Sclarea*. J. J. S.: 1. *Asparagus verticillatus*; 2. *Dierama pulcherrima*. J. E. *Liriodendron tulipifera*.

PEACH LEAVES FALLING: H. F. Enys. The trouble is not due to disease caused by a fungus. Some wrong cultural treatment is responsible, and the spotting on the foliage points to trouble at the roots. Exercise great care in watering. When the trees are defoliated in the autumn lift the roots of one of the trees and ascertain if the drainage is perfect.

PLUM SHOOTS UNHEALTHY: J. H. There is "brown rot" (*Monilia*) on some of the specimens, on others the fungus *Cladosporium*. Have the trees been attacked by Aphis, and the Plums withered off under the attack?

PREVENTION OF SWARMING AMONG BEES: C. L. In reply to your query *re* drones in upper brood chamber, separated from lower brood chamber, by queen excluded in order to supply plenty of space for the queen to deposit eggs and to prevent swarming, we would state that there is little difficulty on this point. It only requires that the corner of the quilt be lifted about noon on days when the bees are actively engaged in gathering nectar, and drones will troop out quickly on seeing daylight and means of escape. This only needs repeating about every third day for about three weeks, for all drone eggs would have produced perfect insects ready to leave the hive in twenty-four days.

PROPAGATION OF BRUNFELSIA: G. F. C. We have never experienced any difficulty in propagating Brunfelsias by means of cuttings, and cannot understand your failure, unless you have used the wrong kind of wood; cuttings made from hard wood might fail as yours have done. They should root readily at this time, or next month. Cuttings made from young growth just hard enough to prevent damping are best. Insert them in pots of light, sandy soil and plunge the pots in a warm propagating case, with a bottom temperature of 65° to 70°. In such conditions they should root readily.

SWEET PEA DISEASED: W. C. F. No fungus was present on the parts of the plant received from you. The damage is due possibly to attacks of *Thielavia basicola*. In such cases as this it is necessary to send a whole plant, including roots.

SWEET PEAS DYING: F. J. J. It is possible the plants have been attacked by the fungus *Thielavia*. The trouble is not due to insects.

TO PRESERVE GREEN PEAS: W. J. M. A method of preserving Green Peas is to shell the Peas, put them into dry, wide-mouthed bottles, and shake them together, so that they may lie as closely as possible. Cork the bottles closely and seal the corks. If available, the screw-top preserving bottles may be used instead. Bury the bottles in the driest part of the garden and take them up as they are wanted for use. Another recipe is: Choose Peas which are large and fully grown, though not old. Put them into perfectly dry, wide-mouthed bottles with screw tops. Put the bottles into a large pan or boiler up to their necks in water. Put the boiler on the fire and let the bottles remain standing in the water for two hours after it has reached boiling point. Screw the caps down tightly whilst the water is at the boiling point.

TOMATO PLANTS DISEASED: T. F. The specimens sent were dead on arrival and in any case were totally insufficient to enable us to determine the cause of the damage.

WHITE DEPOSIT ON VINE LEAVES: G. S. There was no fungus present on the vine leaves. The white deposit is not caused by any fungous disease or insect pest, but probably consists of innumerable dried drops of sap. The condition of the leaves suggests that the atmosphere of the vinery and soil about the roots of the vines have been kept excessively moist. A low temperature at night may be in some measure responsible for the unhappy condition of the vine.

YOUNG GOOSEBERRY BUSHES SCORCHED: Gooseberry. The young bushes have suffered from the application of some corrosive fungicide or insecticide, or the temperature of the spraying fluid has been far too high. Although the leaves have been scorched it does not necessarily follow that the bushes will die; indeed, it is quite probable that new growth will be made unless the injury has been unusually severe.

Communications Received.—J. B.—J. C. N.—S. W.—A. E.—T. W. F.—J. C. R.—H. L.—W. E.—J. T.—J. McF.—B. G.—P. H.—J. G.—D. W.—H. S.—C. L.—A. G.—J. H.—S. M.—H. F.—F. J. J.—R. W. T.—H. B.—J. C. H. & Co.—F. T.—R. W. T.—E. M.—H. S.—C. C.—R. H. L.—J. A. P.—J. C. W.—W. H. A.—C. H. B.—B. O. H.—G. W.—A. C. R.—A. B.—J. C. H.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.38°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday July 21, 10 a.m.: Bar. 30; temp. 69°. Weather—Dull.

Sulphur-Containing Fungicides.

The value of lime-sulphur solutions and solutions of ammonium polysulphides is well known, but before the work which Messrs. Eyre, Salmon and Wormald have carried out at Wye was done, the precise mode of action of these sulphur-containing spray fluids remained uncertain. Needless to say, if spraying is to become a scientific operation based on known fungicidal properties, it is necessary to discover to which of the substances contained in a spray fluid the fungicidal properties of that fluid are due. So long as this is unknown there are bound to be many cases in which the use of a given preparation is unattended by successful results. The recently published researches* of the authors just named lead to the conclusion—which should be noted not only by users but also by makers of sulphur-containing spray fluids—that the fungicidal properties of lime-sulphur and ammonium-polysulphide spray fluids depend neither on the total sulphur content nor on the "sulphide" sulphur, but upon the polysulphide sulphur. It appears, moreover, to be a matter of indifference as to which polysulphides are present in the solution—one polysulphide being apparently as good as another. One point however is left in doubt, and that is whether the freshly precipitated sulphur which often separates out from solutions has or has not fungicidal properties. On the whole, the authors think that it has, and we believe that their view is

correct. In the course of their investigations the authors found that mildews such as *Hop mildew* (*Sphaerotheca humili*) undergo with age a change in their powers of resistance to fungicides. On young leaves they are much less easily destroyed by a given fungicide than they are on older leaves and hence it follows that mildews are less readily killed in the pre-powdery stages, that is before they have developed mature conidia, than they are in the powdery, conidial stages. This is an observation of distinct practical value for evidently it is most important to destroy the fungus before it has begun to produce spores and to spread thereby to other plants. The difference in resistance is so great that to kill the mildew in the pre-conidial stage requires a solution of double the concentration necessary to kill it in the conidial stage. It would be interesting to know whether the young stage is characterised by less permeable walls than is the conidial stage, or whether, as the authors appear to suggest, the resistance of the young fungus is due to greater general vigour, which in turn is due to better conditions (with respect to food supply) obtaining on the young than on the old leaves.

Royal Horticultural Society.—The next meeting of the Committees will be held on Tuesday, the 27th inst. At the 3 o'clock meeting of the Fellows in the lecture room, Mr. J. G. Blakey will give a paper on "Green Fly—its habits, customs and natural enemies." The lecturer will give a review of the original researches conducted by him, including the life cycle of aphides, hardiness, mode of propagation, eggs and egg laying, winged and wingless females, males, and Queen Mothers. The lecture will be illustrated by lantern slides.

Freesia Fischerii.—A new, large-flowered white Freesia, named F. Fischerii, raised a few years ago by Mr. Rudolph Fischer, of San Gabriel, California, is now being distributed in America. A life-size illustration of this plant in the *Florists' Exchange* of July 10 shows that the individual flowers are a little over 2½ inches wide, when fully expanded.

Exportation of Cut Flowers to France.—An important letter on this subject has been addressed to Lord Lee, Minister of Agriculture, by the Chamber of Horticulture, pointing out that while France exports large quantities of cut flowers to England, the importation of English flowers into France is forbidden. The Ministry have been requested to use their best endeavours to persuade the French Government either to withdraw or greatly modify the prohibition. In reply, a letter has been received by the Chamber stating that close inquiry is being made into the matter, and a further communication is promised at an early date.

British Empire Forestry Delegates at Edinburgh.—During Thursday, 15th July, the delegates from the British Empire Forestry Conference, who are visiting Scotland, paid a visit to the Royal Botanic Gardens, Edinburgh. Considerable time was spent in the Arboretum, where the trees were carefully studied. The rock garden and propagating houses were also visited and much interest was taken in the methods of propagation adopted by Professor Sir Isaac Bayley Balfour.

The Jersey Potato Crop.—The Potato growers of Jersey have enjoyed a year of unprecedented prosperity, the total value of the present season's crop being estimated at £1,200,000. As there remains insufficient supplies for the needs of the island population, further exportation of Potatoes has been prohibited.

Forestry Research.—At the conference on forestry, held in connection with the timber exhibition at Holland Park, Sir Claude Hill, in a paper on "Forestry Education and Research," stated that the proposal that central research for the Empire into the funda-

mental problems of forestry should be conducted in Great Britain found support for the reason that only in Europe do there exist exemplars of the ideals towards which silviculture and forest conservation should aim. Emphasis was laid on the desirability, in conjunction with central research, of providing for such post-graduate study and training and for such specialised tuition as may be demanded by the needs of the Empire. In order to meet the requirements of those partners of the Empire who have no university training in the higher branches of forestry, the same central institute would, it was considered, be a suitable centre for the training of the superior forest staff.

Gilbert White Bicentenary.—Sunday, the 25th inst., is the 200th anniversary of the birth of Gilbert White, whose *Natural History of Selborne* did much to turn the attention of Englishmen to the study of wild nature. Gilbert White's power of presenting the natural features of the countryside in an absorbingly interesting manner to his readers has never been excelled, and his work ranks amongst the greatest of literary creations. His pursuits in ornithology were far greater than in botany, but he loved his garden, and the brick walk which he made to his summer house yet remains, although the summer house itself has long disappeared. An illustration of The Wakes, Selborne, where he once resided, was given in *Gard. Chron.*, December 26, 1903, together with the sun-dial, the purchase of which is recorded in his *Garden Kalendar*, under the date of November, 1761.

Brent Valley Bird Sanctuary.—Lovers of bird life will be interested in the movement to permanently acquire the wood and a field adjacent, forming the Brent Valley Bird Sanctuary, which has been reserved for the past eighteen years as an unmolested haven for bird life in the London district. In making an appeal for funds towards the purchase price of £4,500, the Bird Sanctuary Committee gives details of the past work. The sanctuary is situated in the valley of the River Brent, and is seven miles from Paddington. The wood is about nineteen acres in extent, and is of the type known as standards and coppice, the large trees being Oaks and the undergrowth Hazel, though other species give variety and interest to it. Of birds, in whose interests the enclosure has been more particularly maintained, between forty and fifty species are known to have nested, including the Goldfinch, Nightingale, Blackcap, Marsh Tit, Wild Duck, Turtle Dove, and Sparrow Hawk. Some thirty other species have also been recorded as living or making a stay in or close to the wood. These include the Woodcock, Snipe, Magpie, Goatsucker, Kingfisher and Yellow Wagtail. Visitors of all sorts and conditions have derived much pleasure from the wood, and the Committee prides itself that no one who has asked for admission has been refused it. Donations and offers of help may be sent to the honorary secretary of the Bird Sanctuary Committee, Mrs. Wilfred Mark Webb, The Hermitage, Hanwell, W.7.

Spraying Main Crop Potatoes for Potato Blight.—The early appearance of blight amongst Potato crops this year is causing alarm amongst Potato growers in all parts of the country. The only effective check on the disease is spraying with Bordeaux Mixture (copper sulphate combined with lime), or with Burgundy Mixture (copper sulphate combined with washing soda), or with some other known and tested fungicide. Dry sprays may also be used, but the results of spraying tests carried out under the direction of the Ministry of Agriculture show that the use of a fungicide in liquid form gives better results than if applied in a dry form. Spraying is a preventive rather than a cure for Potato blight, and needs to be repeated several times to be effective. The Ministry suggests that crops should be sprayed immediately, and the operation repeated in two or three weeks' time, and again later as appears desirable. When the Potato plants have been injured by aphid (green fly), the Burgundy Mixture should not be used, for experience has shown that it may do harm rather than good if used in such

* "The Fungicidal Properties of Certain Spray Fluids, II," by Vergas Eyre, E. S. Salmon and L. K. Wormald. *Journal of Agricultural Science*, Vol. IX., No. 3, September, 1919.

cases. Whilst it is true that spraying is more important in some parts of the country than in others, e.g., in the western and moister parts rather than in the drier eastern counties, spraying in any part of the country in which disease has been known or is likely to occur is certain to be beneficial. Had the Potato crops of Ireland been sprayed in 1845, there would have been no terrible famine in that year through failure of the Potato crop. There can be little excuse for those who neglect to spray, for it is now possible to obtain the mixture ready made, needing only the addition of water.

Research in Plant Breeding in Scotland.—The scheme for establishing a station for research in plant breeding in Scotland is making what is considered satisfactory progress, although full possession of the land secured for the station has not yet been obtained. This land is on East Craigs Farm, Corstorphine. There are 27 acres in all, to the whole of which possession is to be obtained at Martinmas. By arrangement with the tenant, 3 acres have been planted. A most valuable feature is the collection of Potatoes made by the late Dr. J. H. Wilson, of St. Andrews, which has been handed over by the Scottish Board of Agriculture. It comprises many valuable hybrids and is under the charge of Mr. Robb, Dr. Wilson's leading assistant.

The Oldest Apples.—In a series of interesting letters published in the *East Anglian Times*, and reprinted in pamphlet form, by the Rev. R. Abbay, rector of Earl Soham, an interesting account is given of the oldest Apples in cultivation. The writer states that probably the oldest variety that can be identified is the Borsdoeff, a German Apple that is still popular and largely grown on the Continent. Red Juneating, Ginetting, Jeaneton or Janeton is possibly as old, 300 years or more. Devonshire Quarrenden, known in Suffolk as Summer Coleman, was known in 1690. Dr. Harvey, from whom the well-known Apple is supposed to have derived its name, was Master of Trinity Hall, Cambridge, about 1620, but it is possible that some more recent Dr. Harvey may have given the Apple its name. The Margil is an old Apple, but of uncertain date. The Nonpareil is at least 200 years old, as it was well known 150 years ago. Norfolk Beefing is probably as old. It evidently originated in Norfolk, not in France, but there is no record by which it can be identified. Warner's King was known as the "King Apple" more than 100 years ago, Warner being a Yorkshire nurseryman who rather later helped to make it popular. The Spice Apple, D'Arcy Spice, Baddow Pippin, or Spring Ribston, one of the best on the mixed soils of Essex and Suffolk, originated at Tolleshunt D'Arcy, Essex, and is probably at least 100 years old. Dumelow's Seedling, or Wellington, was raised by a Mr. Dumelow, a farmer in Leicestershire, rather more than 100 years ago, but was later named Wellington by a nurseryman. The early Codlin, Lord Suffield, a most valuable variety, dates from about 1830.

The Planting of Early Potatoes in Infected Areas in 1921.—During the season 1920 the Ministry of Agriculture has decided to permit the planting in districts scheduled as infected areas under the Wart Disease of Potatoes Orders, of first early Potatoes of varieties susceptible to Wart Disease. The concession made to market growers in 1919 for the year 1920, to introduce fresh "seed" of first early susceptible varieties into infected areas, will now be extended to all growers. The effect of this decision is that, next year, any true first early variety of Potato, whether "own-saved" or otherwise, as well as the variety "Eclipse" and any variety recognised by the Ministry as being of the "Eclipse" type, may be planted in any land in an infected area other than land on which Wart Disease has been known to exist.

Genetical Society's Visit to Reading.—On Thursday, July 15, the members of the Genetical Society paid a visit to Messrs. Sutton and Sons, Reading, for the purpose of seeing the work of plant breeding and selection in which

the firm is engaged. Amongst the visitors, who numbered about 40, were Professor Bateson, F.R.S., Director of the John Innes Plant Breeding Institution; Professor Punnett of Cambridge; Professor Tanaka of Japan; Mr. Dykes, Secretary of the Royal Horticultural Society; Professor Blackman of the Imperial College of Science; Mr. Bruce of the Ministry of Agriculture; Mr. D. Wandcutler of Rothamsted; Mr. Pease and Mr. Brown of the School of Agriculture, Cambridge; Mr. Arthur W. Hill, of Kew; Mr. Crew, Plant Breeder to the Edinburgh University; Professor Ostenfeldt of Denmark; Dr. Gates of King's College, London; Dr. Salaman; Major Hurst, and other well-known specialists and plant breeders. The party were received at the entrance to the grounds by Mr. Leonard Sutton, and other members of the firm, and a tour of inspection was commenced, attention being called in the first instance to experiments in the crossing of Dwarf Beans, Brassicas and Marrows, and to the firm's unique collection of wild forms of Solanums from the Andes, and grafts between Potatoes, Tomatoes, and Egg Plants. Lunch was served in a seed granary in the grounds, at the conclusion of which Professor Bateson expressed the thanks of the party to Messrs. Sutton and Sons for the opportunity afforded them of studying the work of plant breeding and selection undertaken at Reading, and the system of trial tests which he stated were of a character such as could be seen nowhere else in the world. He also expressed the great regret felt by all present that day, that Mr. Arthur Sutton, who was a vice-president of the Genetical Society, and who had taken very great interest in the day's arrangements, was prevented through ill-health from being present. Professor Bateson read a telegram received from Mr. Arthur Sutton expressing his interest in that gathering and with the unanimous approval of all present, a suitable reply was despatched. He also referred in eulogistic terms to his appreciation of the facilities which Messrs. Sutton had placed at his disposal for the past twenty years, whereby he had from time to time been enabled to study their experiments in plant breeding, and he stated that while he had been able to help the firm, he had himself learned a very great deal from the large number of experiments upon all types of plants which were possible only in so large an experimental ground. The company then proceeded to inspect the botanical collection of Peas which is one of the largest in existence, and many visitors lingered for a long time to study the curious types and combinations, and the crosses made during the past 15 years on Mendelian lines. Later, the party divided, some spending the remainder of the afternoon amongst the Sweet Peas and Sunflower crosses, others preferring to inspect the Potato seedlings, while quite a large number spent an hour or more in the Botanical Grass Garden.

The Loganberry Grub.—The value of the Loganberry as an edible fruit is largely discounted by the grub which is found in the majority of the ripe berries. A paper on the control of the Loganberry Beetle by Mr. A. H. Lees, in the *Annual Report of the Long Ashton Agricultural and Horticultural Research Station*, shows that disturbance of the soil is effective in reducing the numbers of the pests. The beetle is hardly ever in the open, most of its time being spent in the ground, whilst the larva is present in the berry, making control by spraying an almost useless procedure. It having been observed that Loganberries growing in well-cultivated soil suffered far less from the pest than those in uncultivated ground, a trial was made with twelve rows treated with different methods of cultivation. The soil of three rows was lightly pricked up by a fork about August, a time when the larvae have just entered the soil. Three other rows were treated in this way in spring, about the end of April, when the beetles are about to appear. Another three rows were given both autumn and spring culture, and the fourth three rows were left untouched, except for hand-weeding. At the end of July the

plants were examined. The percentage of affected berries was lowest, viz., 12.7 per cent., where the spring cultivation only was adopted, compared with 33.3 per cent. infection in the untouched rows. The other figures were autumn cultivation only, 25.2 per cent.; autumn and spring, 17.1 per cent.

Tresco Abbey Gardens.—An interesting description of the gardens of Major A. A. Dorrien-Smith, at Tresco Abbey, Isles of Scilly, is given by Mr. Arthur W. Hill in the *Kew Bulletin*, No. 5, 1920. Gales are very frequent in the islands, but by planting belts of trees as wind screens it is possible to provide suitable nooks for tender species, and in this favoured spot may be studied the principal features, not only of the temperate regions of New Zealand, and her outlying islands, of Australia and of South America, but also a vast number of the characteristic features of the sub-tropical vegetation of South Africa.

Peat Fuel in Denmark.—An extraordinary increase in the amount of peat used as fuel is recorded from Denmark. The production rose from 280,000 tons in 1916 to 2,250,000 tons in 1918, and the total value in the latter year was 90,000,000 crowns. Conveying the peat from the bogs to the consuming centres presents great difficulties, owing to poor facilities for transportation, but it is estimated that the peat produced in 1918 substituted imported coal to the value of 126,000,000 crowns.

Appointments for the Ensuing Week.—Tuesday, July 27: Royal Horticultural Society's Committees meet at 12 o'clock; Bath and West and Southern Counties Agricultural Society Council meeting. Wednesday, July 28: Royal Agricultural Society Council meeting; Chesterfield Horticultural Society's show; Richmond Horticultural Society's show. Thursday, July 29: Bolton Horticultural Society's Show (four days); Ulster Horticultural Society, Summer Show, Belfast (two days). Friday, July 30: Midland Carnation Society's Show (two days). Saturday, July 31: Innerleithen Summer Show; Newburgh and District Summer Show.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Irish Gorse as a fodder plant.*—Seeds of Irish Furze (*Ulex stricta*) may be obtained at some of the seed shops, imported from Ireland; but these are probably only *Ulex europaea*, as *U. stricta* is said to be found only in one locality in Ireland. The propagation of this plant from cuttings is certain, when the requisite care is taken of them. A surer method of propagation for the generality of agriculturists is by layering; and those wishing to give the species a trial should obtain a few strong plants, and plant them in some convenient situation, and layer all the branches around each plant at least six inches in depth, leaving only one or two inches of the tops above-ground; they require no nicety in laying down, as they will root equally well whether each branch be put down singly or several together. If they are layered early in spring they will produce rooted plants fit for transplanting in October, so as to allow their roots to commence growing before the winter sets in. They may also be layered in autumn, and these will be fit for transplanting in the following autumn. In taking off the layers they may be divided into as many plants as can be found with roots, and they succeed best when planted deeper than previously, as they soon send out abundance of roots up to the very surface of the soil. The Irish Furze bears transplanting well, as it forms an entangled mass of roots; while the common Furze produces fewer roots, and does not bear transplanting with so much certainty. The plants thrive in almost any soil, but would probably be of most advantage on light sandy or gravelly land, which they would ultimately improve by their decaying masses of entangled fibrous roots. This Furze is also worthy of being planted as an ornamental evergreen shrub; for, although producing few flowers, its normal compact habit contrasts well in winter with other evergreens.—*D. C., Gard. Chron., July 26th, 1845.*

TREES AND SHRUBS.

FAGUS SYLVATICA HETEROPHYLLA.

Writing in 1838, Loudon said of the above variety of Beech that it was more curious than beautiful, and that it was apt to return to the normal form. What he had in view it would be difficult to say, unless he objected to the cut leaves. Many of the latter, on the twiggy branches of fairly old trees, resemble those of a Willow or a Bamboo, when seen in the mass, and have a decidedly handsome appearance. This particular variety should be planted in a situation where the lower branches would have room for development and thus bring the foliage directly under the eye, as I have seen the tree at Highclere, Hampshire and in the grounds of Cherkley Court, Surrey. There is a tree in a garden at Leatherhead that is 50 ft. high or more, with a round, spreading head, but the lower branches have been cut away, possibly to reduce the shade in the garden and prevent inconvenience in the street. It is a fine, healthy tree, but its special beauty is lost, because the foliage is so far above the eye. In none of these cases have I seen leaves reverting to the common or normal form. Parks, pleasure grounds and spacious lawns are the best situations for this handsome tree. J. F.

FEIJOA SELLOWIANA AT KEW.

THIS beautiful South American shrub is flowering in the Royal Botanic Gardens at Kew, where it is grown against a wall facing south. It is a Myrtaceous plant, with a habit of growth similar to that of a Guava, and, in warm climates it produces richly aromatic Guava-like fruits. The solitary, axillary, drooping flowers are freely produced on the Kew specimen, and the largest blooms measure two inches across the expanded petals. The latter are orbicular, white externally, and deep blood-red, with white margins, internally; no less attractive are the numerous blood-red filaments, longer than the petals, which form a large central cluster and are tipped with yellow anthers. Feijoa Sellowiana was found by Sellow in the Cocos australis region of the Rio Grande do Sul, about 1819-20. The generic title commemorates Don J. de Silva Feijó, a director of the National History Museum at San Sebastian. F. Sellowiana is figured in the *Bot. Mag.*, t. 7,620. C. B.

CORNUS KOUSA.

A WIDELY distributed shrub or small tree in North-Eastern Asia, *Cornus Kousa* shows considerable variation in cultivated specimens. The first introductions came from Japan, where the species grows wild in the mountains of Kiusiu and of Nippon. Wild specimens have been collected in Corea, and in 1907, when collecting in China on behalf of the Arnold Arboretum, Mr. E. H. Wilson found this *Cornus* abundant at 4-7,000 feet elevation, north and south of Jehang, in Western Hupeh. The specimen illustrated in Fig. 21 was raised from seed collected by Mr. Wilson, No. 223 W. In leaf and bracts the Chinese form is considerably larger than in those from Japan, and to distinguish them the former has been given the varietal name of *chinensis*, though in the recent figure in the *Botanical Magazine*, tab. 8,833, no distinctive name is given.

Mr. Wilson describes *Cornus Kousa* as a shrub or small, flat-topped tree, 15 to 30 feet high. The leaves are ovate up to 4 inches long and half as wide. The cluster or mass of small, inconspicuous flowers is surrounded by four large petaloid, involucre bracts from 1 to 1½ inch long, in the Japanese form, to 2½ inches in the largest of the Chinese inflorescences, and up to 1 inch wide, creamy-white, changing with age to pink at the edges. It has the fleshy, Strawberry-shaped fruit, similar to those of *C. florida*, *C. capitata* and *C. Nuttallii*. The flowering season is May and June, the showy bracts lasting in beauty for about two months. Unlike Benthams' *Cornus*, *C. capitata* (Benthams' *fragifera*), which attains its full beauty in the favoured climate of the south and west, the subject of this note is quite hardy. A. O.

CORNUS CONTROVERSA.

SPECIMENS of *Cornus controversa* growing in the Arnold Arboretum, some raised from seed collected by Mr. Wilson in Szechuan, have already made remarkable growth.* Some of Mr. Wilson's seedlings are in flower, and one tree in the Arboretum is 25 ft. high. In China, *Cornus controversa* reaches to a height of sixty feet with a trunk of seven feet in girth.

The plant, which is one of the most beautiful of the genus, bears flower clusters six or seven inches in diameter, raised on erect stems from the upper sides of the branches. The colour of the flowers is white, slightly tinged with yellow, and the fruits are black and shining. A point of interest with respect to this species

on both the season and locality; however, an early start is advantageous. In the case of plants, the shoots of which nestle close to the ground, remove a few inches of the surface soil before placing the prepared compost in position. The soil moisture is thus more easily retained than when a mound is formed, and this method saves labour in watering. L.

ABUTILON VITIFOLIUM.

THE Abutilons are all highly decorative plants, but most of them are not hardy enough to withstand the winter in the gardens of Britain. But the blue variety of *A. vitifolium* (*azureum*) and also the more ordinary white form of this plant, can be well grown in the south of England without protection. In colder districts it



FIG. 21.—CORNUS KOUSA.

is its relation with *C. alternifolia*, for though belonging to very different habitats, these two are unique among *Cornus* species in having alternate leaves; yet the one is native of Eastern Asia and the other of Eastern North America.

LAYERING SHRUBS.

PREPARATION should now be made for the layering of *Rhododendron*, *Daphne*, *Rhodothamnus*, *Erica* and other shrubs. Have regard to the requirements of the species to be perpetuated when preparing the compost and select suitable pegs to keep the layers in position. The actual time to perform the operation depends considerably

* *Bulletin of Popular Information*, No. 8. Arnold Arboretum, Harvard University.

may require a sunny wall behind it, from which a frame-light can be fixed over it from November till May, whilst the plant is young, to give it time to form a strong, woody stem, which will enable it to survive the frost.

We have so few shrubs which produce blue flowers that the large, open blossoms of the blue Abutilon are very precious, and the plant is easily raised from seed. Seedlings should be potted and grown under glass during their first season; they are excellent subjects for the cool greenhouse or glass porch, as well as for the garden, requiring plenty of good soil (for they are hungry plants, as are the closely related Mallows) and abundance of water during the summer. The plant grows to the height of eight feet. T. L. Richmond, South Devon.

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGO, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Soil Preparation.—Beds and borders should be prepared in advance for the planting in early autumn of Carnations, Brompton Stocks and Antirrhinums. Deeply-worked soil insures free drainage, which is essential to these plants in winter; with this object in view, it is also advisable to slightly raise the beds above the general ground level. Road sweepings (provided tar is absent) and decayed horse-manure may be thoroughly incorporated with the soil when digging it. Deal with infestations of wire-worm by using a soil fumigant. Bone superphosphate and soot should be forked into the beds a few days prior to planting, and the addition of old mortar-rubble will impart sufficient carbonate of lime to most soils. Thoroughly prepared sites necessitate firm planting, and a board should be used by the operator across wide spaces. Depressions in the soil are detrimental to the plants during the winter, therefore make the surface level before planting.

Hesperis.—A fresh stock of double Rockets should be raised each season to insure a supply of healthy plants. Cuttings made from young shoots strike freely in the open at this season. Afford the cuttings shade from sunshine by placing evergreen branches around them; also supply moisture overhead towards the close of bright days. The single Rocket is a useful subject for naturalising and is easily raised from seed sown in the spring.

Aistroemeria.—As varieties of the Peruvian Lily pass out of flower remove the seed vessels, but carefully retain the stems and leaves of the plant to assist the ripening of the tubers and the formation of fresh crowns for next season. Seeds may be sown, three inches deep, in pots, as soon as they are gathered. Do not attempt to transplant the seedlings when they are very young. Well-drained, richly-manured soil of a light texture is suitable for Aistroemerias, and a sheltered south aspect is desirable. The members of this family of plants are seen to best advantage when set from 15 to 18 inches asunder in broad masses. Afford the plants a mulching of spent Mushroom-bed manure or leaf-mould during the summer to prevent them ripening off prematurely.

Phlox subulata.—The hybrids and forms of this species are all prostrate growing and useful for planting in the rock garden and beside flights of steps. Cuttings removed with a sharp knife at the present time may be inserted in sandy soil in a cold frame and shaded from bright sunshine. An easy way to increase the stock is to work sandy soil gently amongst the branches, in which they will form roots next season. Varieties of varied colours are obtainable and make a pleasing display in spring.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Horizontally-trained Pears.—Continue to give attention to the training of horizontally-trained Pears. The central growths of the tree that were pinched when about 18 inches long are breaking freely. Reduce the shoots to three, train in the centre growth as upright as possible, and then secure the other two growths horizontally. Continue to reduce the number of shoots of all Pear trees and pinch out the tops of those that are growing too vigorously. Where trees are cropping freely examine the borders occasionally for watering, and especially those that are planted in well-drained soil. If the roots are found to be dry water them copiously with weak liquid manure or, failing this, use a concentrated fertiliser

in solution. If the borders have been mulched it will render watering less necessary. Rain falling on borders that are smoothly raked or made sloping is apt to run off, leaving the ground in a hard condition. A light mulching of manure will counteract this and allow heavy rains to penetrate into the border.

Pear Sawfly (Slug Worm).—This voracious insect should be carefully watched for and checked immediately it is detected. The washes recommended for its destruction being poisonous, should not be used after this date on trees that ripen their fruits in August. The leaves affected should be dusted with hellebore powder or hand picking may be resorted to.

Sweet Cherries.—Cherries are frequently attacked by black fly; if the trees are not perfectly free from this insect, the present is a suitable time to adopt measures for its destruction. A few hours after spraying the trees with an insecticide wash them with clear water and afford water to the roots if necessary.

Strawberries.—Except where young plants are needed for the making of fresh beds, all the runners should be removed as soon as they develop. Old beds that have become exhausted are never profitable, and the plants should be heeled up after the berries have been gathered. Remove all weeds by hand from beds that are to remain for another season.

Layering of Strawberry Runners.—Where the layering of runners for the making of new beds has been delayed, the work should be done forthwith.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pot Vines.—The feeding and syringing of pot Vines, which are intended to be started early, should be continued, but more air must be given and the house kept drier throughout the night. As soon as the canes which have been stopped at 6 to 9 feet from the pots have coloured their whole length, a few of the laterals may be taken away close to the main buds, commencing at the base and working upwards. A few laterals should be left near the top to run wild, and each main leaf must be carefully preserved—the laterals to prevent the buds from bursting prematurely, the leaves to build up the buds. If the season is a good one, and the Vines can be secured to a south or west wall, the wood will ripen thoroughly; if not, the best results will follow keeping them in the house and ventilating accordingly. Vines raised from eyes of the current year, now in 7-inch pots, may be placed above the plunging material, in which position they will require more frequent waterings. If the Vines are crowded, a few of the more forward may be removed to other houses where they can have the benefit of more air and plenty of light. If intended for planting next spring, all laterals may be pinched at the first leaf, except a few at the top.

Strawberry Plants.—If runners were layered as recommended in a previous calendar, they should now be ready to put into their fruiting pots. As soon as they have begun to make fresh roots they should be placed where they are intended to develop their growth. The position should be fully exposed to the sun and the pots stood on a firm ash surface. A good plan is to stand the plants in beds where they may be examined easily for watering. Keep the pots clear of weeds and pinch out new runners. Careful attention to watering overhead during the daytime is to be recommended in very hot weather, as the leaves are easily scalded, and especially those of Royal Sovereign variety. Night syringings are more conducive to healthy growth. A suitable compost consists of fairly strong loam with the addition of old lime rubble, bone-meal, and crushed oyster shells, the last to aid a free passage of water. Mix the compost early, as it cannot well be too dry for firm potting, and it is also better for being mixed beforehand. Use clean pots adequately crocked, with a dash of soot over the crocks to keep out worms.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq., Castleford, Chesham.

Miltonia vexillaria.—As the various forms of this popular Miltonia pass the flowering stage, they should be allowed a partial rest for a few weeks in a cool house. Water should be afforded the roots sparingly, but enough moisture should be given to maintain the pseudo-bulbs in a plump, rigid condition. Examine the plants for insect pests, especially thrips, and if these are found dip the growths in an insecticide, laying the plants on their sides until the liquid has drained away. Usually one dipping will suffice during the resting period.

Eulophiella.—The chaste E. Elizabethae is developing fresh growth, and if the plants need repotting or top-dressing the work may be done directly root action is evident. Owing to the somewhat rambling habit of the plants, teak-wood baskets prove suitable receptacles, and they should be filled one-third of their depth with material for drainage. The plant will succeed in Osmunda-fibre and Sphagnum-moss in equal parts, with a moderate sprinkling of crushed crocks added. Make the soil fairly firm, and arrange the growing points in such a way that there is ample space for further development, then the necessity for repotting will not arise for two or three years. Grow the plants in the warm house, and water them carefully until the roots take possession of the compost. At no time should this Eulophiella become excessively dry at the roots.

Laelia anceps.—This Orchid, together with its numerous varieties and hybrids, is now making rapid progress, and the same is true of L. alba, L. autumnalis, L. Gouldiana, and other Mexican species. From now onwards afford the roots plenty of moisture; plants that are well established will need very little shade. These Laelias delight in plenty of sun-heat and light and an abundance of fresh air, both day and night, whenever the weather is favourable. Ample atmospheric moisture must be provided; early in the afternoon the ventilators may be closed, the house thoroughly damped and, if the weather is hot, the plants sprayed lightly overhead. Later in the evening the ventilators may be opened an inch or so, and remain open throughout the night. Failure with these Laelias may often be traced to a close, stuffy atmosphere, dense shade, and lack of ventilation.

PLANTS UNDER GLASS.

By JOHN COTTIS, Foreman, Royal Botanic Gardens, Kew.

Caladium.—The early batch of plants have almost completed their growth, but water should not be withheld too soon, or the corms will fail to develop and mature properly. This gradually withholding of water, as the growth matures, should be followed in the case of all bulbous and tuberous-rooted plants that make annual growth. Many Caladiums and other tropical subjects of this class are lost by growing them in a low temperature during the winter. Most of them suffer if the temperature falls below 50° for any length of time. They are best kept in their pots, or, if shaken out, should be stored in dry sand or some such material, to prevent shrivelling.

Pelargonium.—Show and Regal varieties of Pelargonium that have been stood out of doors after flowering should now be ready for cutting back, but this should not be done until the wood is well ripened. Cuttings for increase of stock should be selected from the strongest growths; they will root readily on an open bench, or in cold frames, and should not be shaded in any way. Younger, cut back specimens retained for growing on should be stood in frames and have lights placed over them; they will require little or no water at the roots until they have started into growth, but should be syringed several times daily. When they have started into growth shake away the old soil and repot the plants in receptacles of the same

size as previously. Zonal Pelargoniums rooted in the spring and intended for winter flowering should be ready for transference to their flowering pots. After potting they may be kept close for a week or so in cold frames, after which time the frame lights should be removed; or the plants may be stood in the open on an ash bed. If frames can be spared it is wise to keep the plants under cover during prolonged wet weather. Young Ivy-leaved Pelargoniums intended for flowering next year should be potted on as they require more root room. They make excellent basket plants and flower more or less all through the year, especially if they are kept well fed and some of the older growths removed from time to time.

Fuchsia.—Fuchsias in pots or baskets require liberal feeding, and if not attended to in this respect they soon pass out of flower: for the same reason they should not be allowed to set seeds. Planted cut they are ideal subjects for furnishing pillars and rafters in the conservatory. The Fuchsia is very subject to attacks of mealy bug, and constant attention is needed to keep the plants free from this pest.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Carrots.—In a protected position, outside, make a generous sowing of early varieties of stump-rooted Carrots. The seedlings will escape attacks of the Carrot-fly and produce a succession of young Carrots until the end of the year, after which time any unused should be lifted and stored. Work the ground into a fine condition and sow the seed in shallow drills drawn one foot apart, covering the seed very lightly. As soon as the seedlings appear use the Dutch-hoe on frequent occasions, and spare no effort which will encourage a quick growth. Thin the seedlings to two inches apart as soon as they are large enough to permit of this being done. Where there are facilities for the frame culture of Carrots, sowings of similar varieties should be made in frames.

Coleworts.—These greens are always useful for late autumn and early winter supplies, and a good breadth should be planted on ground that is available. The plot should be manured and dug, as good treatment is essential to success. Plant the seedlings in rows, allowing them a space of one foot each way. It is advisable to make two or three plantings to provide for successive cropping.

Onion Mildew.—The excessive rains and cold nights which prevailed early in July have provided conditions favourable to an attack of mildew, caused by the fungus *Peronospora Schleidenii*. It is first noticed as a bluish coloured patch on the foliage; and once it is established is very difficult to control. In the case of Onions grown for exhibition the part affected should be sponged with equal proportions of soft soap and flowers of sulphur, mixed with sufficient water to form a paste, leaving a coating on the leaf. This specific will destroy the spores, but a sharp watch must be kept for fresh outbreaks. In this way the trouble may be kept under control sufficiently to bring the bulbs to maturity. In the case of Onions raised from seed sown direct in the beds, this method is not practical, but if slaked lime and sulphur in equal proportions are dusted on the plants whilst they are damp, they will check the disease. This treatment should be persevered with until it is seen that the foliage can render no further assistance in developing the bulbs—at which time they should be drawn and ripened in a place where they will receive protection from rains. Onions lifted at this immature stage and thoroughly ripened, will keep well, and I have known instances of crops pulled in July, owing to attacks of mildew, keeping throughout the winter.

Brussels Sprouts.—As the earliest plants gain in height they are very liable to become bent by the wind and this would cause the lower buttons to become worthless. Support each plant by tying it to a stake.

FLORISTS' FLOWERS.

LARGE-FLOWERED PELARGONIUMS.

The large-flowered Pelargoniums have at one time or another been divided into several sections or groups, the marked divisions of which have now almost disappeared. In olden days show Pelargoniums were very popular, and though the title is still commonly used, most of the varieties grouped under that head are of a nondescript class. The true show Pelargonium has the two upper petals heavily blotched with a dark tint to such an extent that they are nearly covered, with, in some cases, a

as to shape or markings, some having the edges of the petals prettily crisped and undulated. These for some years bore the title of French Pelargoniums. After that those termed spotted varieties made their appearance. In these each petal was marked with a clear and distinct spot, a good illustration of which is to be found in the old Kingston Beauty, sent out by the firm of Messrs. Jackson, of Kingston. I was very interested to see this old variety still figuring in a recent catalogue.

The variety Queen Victoria was sent out in the '70's. In this the undulated petals are very massive and give the impression of a semi-double flower. This was by an enterprising nurseryman given the title of Regal Pelar-



FIG. 22.—CALCEOLARIA MERTON SEEDLING "A."
(*C. angustifolia* × herbaceous *Calceolaria*; × *C. alba*.) (See p. 47.)

narrow edge of a brighter hue. Whatever the colour of the three lower petals, blotches on them were inadmissible in a true show variety. The edges of the petals should be quite smooth.

The last raiser of the show varieties was the late Mr. Foster, of Clower Manor, Windsor, whose new varieties, sent out by Mr. Charles Turner, of Slough, formed an annual feature. Many of these novelties sold for one guinea or one guinea and a half each, and there was a good demand for them.

Most of the varieties raised by Mr. Foster, or at least as many of them as came under the public eye, were remarkable for their fine shape and colouring. In-breeding, however, led to a weakened constitution, and consequent decline in the plant's popularity, so that now very few true show varieties are grown.

In the 50's of the last century many new sorts were raised by French nurserymen. The flowers of these did not conform to any rules

gonium, and great was the demand for it, at a guinea a plant. Others of the same race followed, and so readily did they sell that the term Regal was often applied to varieties differing widely from the original Queen Victoria. A title that has been applied to certain Pelargoniums within more recent years is that of Decorative, this class being characterised by good habit and large trusses of showy flowers. Now that the points of difference between the several sections has to a great extent disappeared, the name of Decorative seems to be a good and comprehensive title for the whole of them. One cannot but regret the dropping out of favour of the pretty, free flowering Fancy Pelargoniums, the blossoms of which are not large enough for present-day tastes. The various forms of Pelargonium constitute a valuable class of flowering plants suitable alike for the greenhouse and flower garden, in summer. W. T.

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OF SLUGS.

IT must now be some years since a correspondent in these pages requested some information from me concerning slugs and the control of them. At the outset, I may say that in my garden it is practically hopeless to attempt to grow any but the most resistant plants unless the ground has first been cleared of slugs. Peas, Carrots and Lettuce may germinate admirably, but in a night or so the rows are without a vestige of a plant. On the contrary, with some preliminary attention, not a seedling is lost from this cause. The modes of attack have gradually undergone the process of evolution from those requiring constant personal attention to those of a more automatic character.

Methods of attack which require constant personal attention are also largely dependent on weather conditions, moreover much stooping of a backache-engendering character is needed.

THE DIRECT HUNT.

This is the most primitive and back-aching method, though with perseverance it leads to fair results. As a rule the hunt is most profitable after dusk, and hence a light is required; a brilliant light is a great aid and is well supplied by an acetylene bicycle lamp conveniently attached by a bracket to a pointed stick which can be thrust into the ground. Among common implements of attack may be mentioned hatpins, scissors, forceps and the unaided fingers, but the most satisfactory is a tin box made pepper-pot-wise by punching a few holes in its lid and charging the box with powdered sulphate of alumina; instead of picking up the quarry, and transferring it to a pot of brine, a few grains of the chemical are dusted on to the offenders. Sulphate of alumina is a refinement from the more anciently-used calcined alum; weight for weight it is more effective and cheaper, and it merely needs the contact of one or two minute particles with the skin of a slug to ensure its certain death. It is curious how extraordinarily sensitive the slug and snail are to this agent. Peppering around, where the slugs are seen, is a quicker and simpler process than attacking them individually with instruments. Alternatively the chemical may be used in solution and sprayed on; a strength of 1 in 500 is adequate, and no harm will accrue to quite tender plants at this strength, but when peppering it is well not to give too heavy a dose, say, to very young Lettuce plants; indeed, it is not necessary to do more than give a very light scattering of the powder. Commercial qualities of the salt which contained some iron were very cheap before the war, but probably now the price is exalted; a good deal of a hundredweight which I bought more than ten years ago is still available for use.

DETERRENTS.

The time-honoured soot or lime, or lime and soot mixed, may be of use on occasions, especially under the shelter of cloches or in frames, but for outdoor work they are of little use, as a shower of rain destroys their utility. As for the rationale of their action, such as it is, in the case of soot the mechanical effect is combined with tiny amounts of sulphate of ammonia, whilst in the case of the lime the intensity of action as a caustic does not seem to approach that of sulphate of alumina. Sawdust and coal ashes may be mentioned as other defensive materials; I also have heard of iron filings being used with success, but they can hardly be used over a comparatively large area. Fine ashes, well heaped around and over such subjects as Carrots, large-rooted Parsley and

Toads and frogs have a plausible reputation, but in my experience it is not well enough merited. In my garden both are to be seen in some numbers as a rule, but their chief doings in regard to the slug pest seem to be the disturbance of the traps, which will be described later.

MADE NOOKS AND BAITS.

By some, stones, tiles, crocks, boards and the like are placed about to form "havens of refuge" whence collection has to be made by personal attention. Rather more protective, should inspection not be methodical, are such devices when they are baited; for baiting, bits of Carrot, Lettuce or Cauliflower leaves, bran, brewers' grains, and smearing with beer, have their advocates. Witloof or Chicory and Costmary are very attractive, and if one could distill the quintessence of Delphiniums, one might



FIG. 23.—CALCEOLARIA MERTON SEEDLING "B."
(*C. augustifolia* × herbaceous *Calceolaria*; × *C. cana*.) (see p. 47.)

other things intended for flower or seed, have some value.

NATURAL ENEMIES.

As in most, if not all, cases, the "natural enemy" fails in giving sufficient protection. Though no doubt some small proportion of pests may be destroyed by their agency, they cannot be relied upon. With regard to them, I may point the tale with reference to the flea and the louse; with great and enduring pertinacity their "natural enemies," the monkey, the dog and cat, nay even on to mice and men, are hunting them day by day and into the night season, but they still bide in their haunts till Pyrethrum or Safrol are exhibited. So far as I am aware none of the wild birds make any use of slugs. Fowls and ducks, especially the latter, however, will do a lot of clearing, unfortunately, of other more treasured things too!

be able to make slugs follow one about as did the Piper of Hamelin the rats. All such devices require clearance at frequent intervals for the pests will not remain in self-internment for long; where such are used the sulphate of alumina "pepper-pot" is the handiest mode of compassing the demise of the slugs.

AUTOMATIC DEVICES

Several forms of trap have been devised and patented in which the slugs are attracted by means of dry bran and thence precipitated into a lethal reservoir containing brine. Of these the "V.T.H." trap is perhaps the best known. It is large, cumbersome, and designed on the fallacy that it is needful to have the bait cup isolated by means of brine. For use in anything like reasonable numbers it is expensive, and also occupies far too much ground. H. E. Durham.
(To be concluded.)

HYBRID CALCEOLARIAS.

NEARLY everyone is familiar with the florists' large-flowered race of herbaceous Calceolaria, which was obtained about a hundred years ago by crossing *C. corymbosa* with *C. crenatiflora*. In addition to these, several other hybrids have been raised from time to time, such as *C. Kayii*, *C. Hopcana*, *C. Stewartii*, *C. Wheeleri*, *C. Kellyana* and *C. Youngii*, but nearly all of these seem lost to cultivation.

Several of the more recently-raised hybrids, however, are still to be found in our gardens or greenhouses, such as *C. Allardii*, *C. Ballii*, *C. Bronze Age*, *C. Burbidgei*, *C. Buttercup*, *C. Cibrani*, *C. Golden Glory*, *C. John Innes*, *C. Kewensis*, and *C. Veitchii*.

In the year 1911, the late Mr. E. J. Allard, superintendent of the John Innes Horticultural Institution, Merton Park, Surrey, turned his attention to the Calceolaria, with a view to raising new hybrids. He succeeded in getting together a large number of species and varieties from Kew and other sources. Among the species collected in this manner were the following:—*C. alba*, *C. amplexicaulis*, *C. angustifolia*, *C. bicolor*, *C. cana*, *C. corymbosa*, *C. crenatiflora*, *C. Forgetii* (*C. virgata*), *C. fuchsiaefolia*, *C. hyssopifolia*, *C. integrifolia*, *C. Pavonii*, *C. perfoliata*, *C. plantaginea*, *C. polyrhiza*, *C. Sinclairi*, *C. thyrsiflora*, *C. violacea*, and the following hybrids: *C. Burbidgei*, *C. Jeffreyi*, *C. Cibranii* and *C. Veitchii*. By crossing and recrossing several of the plants mentioned above, Mr. Allard was successful in raising many distinct hybrids of great horticultural promise. Many of the attempted crosses, however, failed to set seed.

Very few of these hybrids produce seed freely, nor do they generally come true from seed, though certain of them may be none the less important on that account. Propagation is effected by means of cuttings, or by division of the plants, which is no easy matter with certain of them because of their monocarpic nature. Moreover, those with very soft and woolly leaves—due to crossing with *C. cana*—are very liable to "damping off" during the winter, and are also subject to a mysterious disease known as "wilt." In spite of these defects, it is possible to maintain quite a good collection of the hybrids and seedlings by means of cuttings taken late in, or immediately after, the flowering period, which is from May to July.

Seeds of most of these hybrids may be obtained by artificial pollination. They usually ripen during June and July and should be sown as soon as gathered in order to obtain plants strong enough to flower the following year. Careful sowing of the seeds is essential owing to their minuteness. A warm greenhouse suits the seedlings very well until they are large enough to be potted up singly, at which stage they should be grown on in a cool place until the approach of frost, when they should be transferred to a frost-proof greenhouse. A high temperature causes weak growth and a predisposition to attacks of red spider and aphids.

The seedlings are best pricked off from the seed pots into pans or boxes of well-drained soil, and afterwards potted into 60-sized pots and finally into 48-sized or 32-sized, according to the size of the plants. They will commence to flower nine to ten months from the time of sowing the seed.

Certain people have a distinct liking for these new hybrid Calceolarias and would doubtless grow them if obtainable from seedsmen and nurserymen. The fact that they set very little seed unless hand-pollinated, and that very few of them breed approximately true to colour or form, militates against their becoming popular as greenhouse plants.

Tests are now being made at Merton to discover if any of the hybrids will breed true from seed in the same way as the large-flowered herbaceous section does.

It should be mentioned that several of the new hybrids, in which *C. cana* is one of the parents, have very woolly leaves, and flowers of various shades of colour, many of them being

beautifully blotched or spotted. Nearly all the hybrids and seedlings kept at Merton are grown under a number, corresponding to a number in the record or pedigree books. They have not been given names, nor are they in general cultivation as yet. When they get into commerce they will probably be given varietal names.

The three hybrid Calceolarias illustrated in this issue are among many similar plants raised at the John Innes Horticultural Institution, Merton. The parentage in each case is somewhat complicated, having been derived by crossing and recrossing several species with the herbaceous Calceolaria, as stated below.

C. Merton Seedling A. (Fig. 22) represents a "selfed" seedling from a cross made originally between *C. angustifolia* and the herbaceous Calceolaria. One of the seedlings from this cross was again crossed with *C. alba*, which is clearly seen in the character of the leaves

C. Merton Seedling C. (Fig. 24) is also a "selfed" seedling from a hybrid plant, in which *C. angustifolia*, *C. crenatiflora*, *C. integrifolia* and *C. cana* have each played a part. The plant resembles *C. cana* in having soft, woolly leaves and spotted flowers, and breeds fairly true to these characters. The flowers have a creamy ground with prominent chocolate spots. It makes a handsome greenhouse plant, and is easily propagated from cuttings taken after the plants have flowered.

It may be of interest to readers if I name some of the more popular Calceolaria hybrids now in cultivation, giving, when known, the parentage of each, together with references where fuller information may be found.

Calceolaria Allardii was raised in 1913 by the late Mr. E. J. Allard. This is a beautiful and easily-grown greenhouse plant, with pure yellow, unspotted flowers. It was obtained by crossing



FIG. 24.—MERTON SEEDLING "C"; A HYBRID OF MIXED PARENTAGE (SEE TEXT).

and general habit of the plants. This hybrid breeds fairly true from seeds as regards leaf shape, but the flowers vary from white to yellow, with a tinge of purple. The leaves are glabrous, lanceolate and dentate. Propagation is easily effected by means of cuttings.

C. Merton Seedling B. (Fig. 23) is a free-flowering greenhouse plant, raised by crossing *C. angustifolia* with the herbaceous Calceolaria, and then one of the seedlings resulting from this cross was again crossed with *C. cana*. The narrow, pointed, serrated and wavy leaves came from *C. angustifolia*. The pubescent stems and woolly leaves are characteristic of *C. cana*, and the dark-red or wine-coloured flowers came from the herbaceous Calceolaria. Propagation is easily effected by means of cuttings taken in June or July.

C. angustifolia with *C. plantaginea*, and one of the seedlings resulting from this cross was again crossed with a yellow-flowered herbaceous Calceolaria. *C. Allardii* was figured in *Gard. Chron.*, June 8, 1918, p. 259.

C. John Innes is a hardy herbaceous plant, suitable for a shady border or a cool part of the rockery. It is of a spreading habit, and only a few inches high when in flower. The flowers, which are produced freely in May and June, are yellow, with a few chocolate blotches. This hybrid was raised in 1912, by Mr. Allard by crossing the two hardy herbaceous species, *C. plantaginea* and *C. polyrhiza*. It was described and figured in *Gard. Chron.*, June 20, 1914, p. 433. *A. Hosking, The John Innes Horticultural Institution, Merton Park, Surrey.*

(To be concluded.)

STRAWBERRIES.

It is unwise to allow a season to pass without planting one or more new beds of Strawberries. There are occasionally to be found growing in good, deep loams, old plants that repay for the ground they occupy after the third year, but the practice is too risky to merit consideration.

It is worth while at this season to decide what new varieties are to be tried, for in addition to the well-known standard sorts there are several meritorious new ones and a season's experience of a novelty is the surest method of finding out its particular merits.

Plants established in pots are necessary for planting in order to make sure of a crop the first year. Where old plants decline in vigour quickly, owing probably to a naturally poor soil, the improvement that invariably follows a change of stock is also not to be overlooked. In any case, the grower should propagate from fertile, robust plants only, and, as a general rule, those planted early last season are of this character. If the strongest runners were selected at the first opportunity, and pegged down in small pots filled with loamy soil, they should be ready for severing from the parents a week or two before the usual time for planting, and will rapidly recover afterwards if stood somewhat in the shade, and kept moist at the roots.

In so far as the soil is concerned Strawberries give the best return on a somewhat heavy, deep loam. Light sandy soils need the admixture of moisture-retaining material, such as heavy manure; if heavy loam is also applied the results will be even better. Land of a retentive nature may be made lighter by adding refuse from the rubbish fire, road grit, and stable manure.

Since the plantation will be expected to last a considerable time in bearing, deep digging and liberal manuring are essential. Much labour in this direction may be saved if land cropped with early vegetables, such as Peas, which was trenched and manured during the winter, is selected. For the main Strawberry crop an open site is desirable, but a warm, south border should be selected for plants to furnish the earliest supply, and one rather more shaded for the latest.

It is an advantage if the digging can be completed a little in advance of planting in order to allow time for the soil to settle. The distance apart to plant is governed by the nature of the soil and the variety. Royal Sovereign, a vigorous grower in the best district, may be too close after the first year with the rows nearer than three feet apart, and a foot less between the plants, while the more compact growers will have ample space in rows 2½ feet apart, and rather less than that distance between the plants in the rows.

Prepare a level surface, and see that the soil is moist in the pots before turning the plants out. It is necessary to plant firmly, and the ball should be placed sufficiently deeply to permit of it being lightly covered. Where the soil is very unfavourable embed the ball in richer material in order that the plants may grow freely at the commencement. If showery

weather is selected for the work, much labour will be saved in watering. Keep the soil well stirred with the hoe, and remove runners as they appear. Healthy plants will not be long in establishing themselves in the soil, after which they will be considerably benefited by watering freely with liquid manure. This treatment will ensure a crop of high-class fruit the first season, and the berries will be ripe in advance of similar varieties growing in older beds.

To maintain a supply of fruit over as long a period as possible, forethought is necessary. As a succession to the last batch of forced plant, such early sorts as Vicomtesse Hericart de Thury, or Royal Sovereign, should be grown on a warm border, and so arranged as to permit of some portion of the plantation being afforded protection against late spring frosts, which does irreparable damage to the blossoms. The use of frame lights will hasten the ripening of the berries some days in advance of those left more or less uncovered. Those in the open garden will immediately follow, according to their age. It is not always advisable to rely too much on one variety for the mid-season crop, which is generally expected to meet the demand for preserving. Among the best mid-season varieties are the Bedford, Laxton's Profit, Fillbasket, and President. Of late varieties, some of which should be planted on a north border, Givon's Late Prolific, Laxton's Latest, and Waterloo are reliable sorts. Pineapple is worthy of a place in gardens for its delicious flavour alone. *Yorkshire Gardener.*

VEGETABLES.

SPRING CABBAGES

THE time is at hand for sowing this important crop. An open position should be selected for the seed-bed, and the seed sown thinly. In these conditions the seedlings will develop a vigorous growth—an essential feature if they are to survive the winter. When the young Cabbages are large enough to handle, they should be transplanted, four inches asunder each way, in nursery beds. Choose a light situation and make the soil firm. In September the plants will be ready for removal to their permanent stations.

On no account should the soil be heavily charged with fresh organic matter, or exuberant, unresistant growth will develop. Early Potatoes leave the ground in a suitable condition for spring Cabbages. Simply dig the site, make it firm and plant the seedling Cabbages a distance of one foot between the rows and the same space from plant to plant. This spacing is rather close, but with a purpose. In the spring, when green vegetables are scarce, alternate plants may be cut and used while the heads are still small, the remainder being allowed to mature in the ordinary way.

Spring Cabbages often succumb in large numbers under the influence of severe frosts, and drying winds. If Bracken or straw is spread on the ground between the rows, the

percentage of losses will be very small. In the early months of the year food supplies in the soil are unavailable and growth is stationary. The application of a readily available fertilizer at that time will produce a favourable change. Nitrate of soda may be used at the rate of 3 oz. to the square yard. The choice of varieties should fall upon those which do not run to seed prematurely. In this respect I can, with confidence, recommend April, Flower of Spring and Harbinger.

Spring Cabbages often fall victims to the larvae of the Cabbage Fly (*Phorbia brassicae*). There is no cure for this destructive pest, but there are methods of prevention. Paper collars are the best that have come under my observation. They are easily applied to the stems of the Cabbages at the ground level. A ring of soot or of paraffin and sand placed around the plants will also help to ward off the flies. The presence of finger-and-toe disease is an indication of the need of lime. This disease is rarely present in soils well supplied with calcareous matter. *G. H. Copley.*

LEEKS.

LEEKS intended for exhibiting should be examined frequently, and the collars used to assist the blanching gradually raised until the desired length of blanched stem has been obtained.

An easy method of blanching is to fix boards one foot apart and fourteen inches deep on either side of the row, keeping them in position by stakes. As the collars are raised fine soil should be added until the space between the boards is full of earth, when the collars should be removed. To prevent the rain washing the soil into the leaf-sheathes a covering of straw should be laid on the surface. The plants require an abundance of water, and the roots should be fed on frequent occasions.

Late Leeks should be planted by inserting them in holes made one foot deep with an iron bar, allowing them a space of a foot each way. Plant to the full depth, adding just sufficient soil to cover the roots, afterwards giving a thorough watering. Planted in this way a good length of stem will be blanched. As severe weather does not affect this crop an extensive planting should be made at this date to provide supplies for winter and late spring. *W.*

TRIAL OF PARSNIPS.

DURING 1919 a Parsnip trial was conducted at Steeple Aston, under the auspices of the Oxfordshire Education Committee. The soil is a sandy loam with a sandy subsoil, and the situation is an open one with a southern aspect.

A piece of ground 49 yards by 9 yards was divided into 11 plots, on which were planted 11 varieties of Parsnips. The previous crop was Potatoes.

The exceptional season somewhat handicapped the trial, as some of the seeds were planted late and drought prevented some of the manures benefiting the crops as they should.

The result of the trial is shown in the table below:—

No.	Variety.	No Manure.	Sulphate of Ammonia, 1 oz. per sq. yard.	Blas furnace flue dust (potash) 2 oz. per sq. yard.	Superphosphate, 2 oz. per sq. yard.	Manures B. and C.	C. and D.	B. and D.	B. and C. and D.	Total yield per plot.	Remarks.
		A	B	C	D	E	F	G	H	Ib.	
1	Elcombe's Improved	14	17	24	17½	24	32	24	20	172½	The finest table variety.
2	Student	19	23	18	23½	28	29	27	27½	194½	This variety as usual did well on this soil.
3	Hollow Crown	27½	24	27	39½	26	31	26½	26	220½	A heavy cropper of good quality.
4	Intermediate	19	20	28	20	23	25	22	20	171	A good variety, but grew small chiefly through drought.
5	Large Guernsey	17½	18	17	18	16½	18	19	21	145	These were partly spoiled through moles, or the results would have been better.
6	Tender and True	16	19	15	19	15	18	17	16	135	
7	Improved Marrow	15	21	20	15½	19	19	20	17	146½	A choice table variety.
8	Tender and True	16	21	19	17	18½	18	18	16	143½	Moles spoiled the yield, otherwise the roots were good.
9	Jersey Marrow	16	17	19	23	21	21	17	18	152½	Suffered from drought, or the crop would have been good.
10	Lisbonnaire	14	15	23	19	16	19	14	19	139	do. do. do.
11	Exhibition	15	21	16	18	16	17	18	19	140	do. do. do.
Totals in lb.		189	216	220	222½	223	247	222½	219½	1,759½	

INDOOR PLANTS.

CINERARIA.

WELL grown Cinerarias provide a fine display in the conservatory and greenhouse during winter and early spring, and, as they require a minimum of fire heat to bring them to perfection, they are all the more acceptable now that fuel is scarce and dear. Cineraria flowers are also valuable for cutting, especially those of the stellata type.

Cineraria seeds should be sown some time in June to produce plants to flower during the early spring; an earlier sowing is desirable if plants are required to flower in the winter, while a later sowing will serve to prolong the season. The seed should be sown in fine soil, in pans, and the pans placed in a cold frame in a shady position. The seeds will soon germinate if kept moist; when the seedlings are large enough to handle, prick them off into boxes or small pots and again place them in a cool position, shaded from the sun, and water them carefully. Keep the frame closed for a day or two afterwards, and then afford plenty of air to promote a sturdy growth. As soon as the plants are well rooted, give them another shift into five-inch pots, using a compost of turfy-loam, preferably hand picked, flaky leaf-soil passed through a sieve of half-inch mesh, a little sifted, dry cow-manure, and some silver sand. Two parts of the loam to one part each of the leaf-soil and manure will suit Cinerarias. Pot firmly, continue to grow the plants in a cool frame on an ash base, and syringe them every day. Allow the plants plenty of room, and as they become well rooted, give them light doses of diluted liquid manure or soot water at the roots, with a change now and then in the shape of a reliable artificial manure. Weak soot water is a splendid fertiliser for Cinerarias, as it helps to build up fine, dark-coloured foliage, and, subsequently, fine blooms.

In the autumn, when there is danger of damage by night frosts, the plants should be protected with mats, and, as the winter advances, it will be safer to house the plants in a slightly heated frame, only using enough fire-heat to keep out frost, and admitting plenty of air in favourable weather.

If large specimens are desired—and they are more effective than small ones—the best plants should be potted on, when ready, into seven-inch and eight-inch pots, using a compost similar to that previously advised, only in a slightly rougher state, and with the addition of some half-inch charcoal to keep the material sweet. Great care should always be taken that the pots are well-drained, as no plant resents stagnation at the roots more than the Cineraria. When the plants show signs of flowering, they may be removed to the greenhouse, and be lightly fumigated on two successive nights to destroy any insects on them, as they are rather subject to attacks of green fly. The cooler and better Cinerarias are grown the less will pests attack them. They should be potted with great care, as the leaf stalks are very brittle, and a good plant may be ruined by careless handling.

Seeds of a good strain of Cinerarias will result in plants having flowers of many beautiful shades of colour. The old magenta colour that had a tendency to bring Cinerarias into disrepute is now very rarely seen. The large-flowered dwarf type is very handsome if well grown, but the stellata section is, perhaps, more largely grown, as, not only are the plants much taller and more graceful, but the colours are more beautiful than those of the large-flowered sorts. There is a Cactus flowered strain which is very attractive; the petals of the flowers are curled like those of a Cactus Dahlia. Plants of the stellata varieties will grow up to five feet high, with good cultivation. In another strain the plants do not grow so tall, whilst the flowers are intermediate in size between the florists' and the stellata varieties, and where room cannot be found for the tall strain this is certainly the best one to grow. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Leaf Curl on Peach Trees (see page 23).—During my ten years' residence at Cromarty House, in the north of Scotland, where fine fruits were grown, I was much troubled with Leaf Curl. This disease was mostly restricted to certain varieties, and I always thought its presence was due to cold draughts, as the trees most affected were growing at the corner of the kitchen garden on walls facing south and west. I had the affected leaves picked and burned directly curling was noticed, and the trees were well attended to in the way of feeding, with the result that during the last two or three years I was there Leaf Curl had completely disappeared. *Henry Henderson, Estate Office, Ballinacourte, Tipperary.*

Big Bud in Black Currant.—In your issue of July 3rd, p. 10, under "Big Bud in Black Currants," a correspondent mentions the case of a Black Currant grafted on budded on an unknown stock, which

to within an eye or two. As this Rose grows very freely, the soil in which it is planted should receive an annual dressing of farm-yard manure, bone meal or liquid manure. *E. M.*

Two Useful Senecios (see p. 37).—Adverting to your correspondent's note on two useful Senecios for the conservatory, I may draw attention to two equally useful species for the flower garden or shrubbery, namely, *S. laxifolius* and *S. Greyi*. Both the plants are natives of New Zealand and closely allied, but the latter has larger, broader leaves than the former, and the flower heads are in rather denser corymbs. In a garden in the South-West I recently saw a charming plant of *S. laxifolius* with an abundance of its beautiful, golden-yellow flowers which are enhanced in appearance by a reddish-brown disk. The specimen was some two to three feet high, and of a somewhat straggling habit of growth. The leaves are extremely handsome, ovate in shape, from one inch to two and a half inches long, and, when young, covered with a grey felt on the upper surface, whilst the under surface is clothed with a dense,



FIG. 25.—SENECIO LAXIFOLIUS; FLOWERS YELLOW.

has never been known to be affected with Big Bud. We shall be glad if *J. E.* will kindly give any further information in regard to this, and if he will send us a piece of the stock root to use as a root cutting if the stock cannot be identified. We will gladly pay postage. At this station we are investigating problems in Black Currants, and already have obtained interesting results. *Arthur W. Witt, Propagator, East Malling Research Station, East Malling, Kent.*

Rose American Pillar as a Screen.—For vigorous growth, luxuriance of foliage and freedom of flower, no rambler Rose can equal American Pillar (introduced by Conrad in 1909) for a fence or screen. I have lately seen this variety made use of in extending the height of a wall alongside a public road. Plants treated in this manner provide a wealth of blossom, not only to the owner on his side, but to the public passing by on the other side. When once the desired height of a Rose fence is obtained, the stout basal growths may be encouraged. After the foundation is laid, the yearly growths that spring from the nodes and which give the full flower crop, should be pruned back annually

white tomentum. Both the species are somewhat tender, but I have seen *S. laxifolius* flowering well in a sheltered situation in the Hon. Vicary Gibbs' gardens at Elstree, Hertfordshire. Apart from their rarity, both species are worthy of planting in the shrubbery for the beautiful effect produced, not only by the flowers, but also by the handsome, evergreen foliage. In most gardens there are snug, sheltered situations where these somewhat tender, shrubby Groundsels would succeed. *W. T. S.*

Apple Rev. W. Wilks.—This variety of Apple is remarkable in more respects than one. It is amongst the most reliable in cropping, bears freely as a very young tree and gives Apples of enormous size. In a garden I visited on the 19th inst. this variety was the outstanding one in a collection, and already on that date several of the Apples must have weighed $\frac{1}{2}$ lb. each. The variety crops well trained as a cordon, but when grown in this shape a strong support is necessary or the stem will be unable to support the weight of the fruit; a fine tree in my garden was broken in this way when I was on holiday. *T. G.*

SOCIETIES.

WOLVERHAMPTON.

JULY 14 AND 15.—The 28th Annual Show of the Wolverhampton Floral Fête Committee, the second since the cessation of hostilities in the Great War, was held on the above dates in the West Park, than which there could not be wished a more charming or appropriate setting for such an event. In pre-war days Wolverhampton ranked with the finest of the provincial exhibitions as well for the large number and high average quality of the produce staged as for the enterprise of the managing committee and the excellence of the general arrangements. On the present occasion there were conspicuous indications that old, characteristic glories were in process of restoration, especially, perhaps, in the magnificence of the groups of plants arranged for effect, the beauty of the Roses and the variety of the exhibits displayed not for competition. The extent of the Show was not that of the old time, but this was mainly the fault of growers, who made entries and did not fill them, as was proved by the allocations of space for the several classes. This was always a source of worry to show authorities, and there are not lacking signs that irresponsibility on the point is becoming accentuated. This must be strongly deprecated, and growers should realise that it is their duty to fulfil their obligations or to give such adequate notice to the show secretary as will enable arrangements to be made to obviate wide gaps on floor and table which militate against the general effect of exhibitions.

Fortunately, the weather on the first day was fine, without being uncomfortably hot, and during the early afternoon the public commenced to flock to the splendid marquees, in which were to be seen much of the country's finest garden produce. The Committee's arrangements to meet the comfort and convenience of everyone were excellent.

In the class for a display of miscellaneous plants, in and out of bloom, and flowers arranged for effect on a ground space not exceeding 25 feet by 12 feet, there were two contestants, of whom Messrs. JAMES CYPHER AND SONS were placed first with an exhibit which, in the unanimous opinion of the judges, was as near perfect as anything done by the hand of man can be. Excellence of culture was manifest throughout, and the disposal of every individual plant and flower was in good taste. The second position was assigned Sir G. H. KENRICK (gr. Mr. G. Macdonald), Edgbaston, who showed splendidly.

For a group of ornamental foliage plants arranged for effect on a ground area of 200 feet, Messrs. J. CYPHER AND SONS were a comparatively easy first, with Mr. G. MACDONALD second, and Mr. W. R. MANNING, Dudley, third, the last with good plants but arranged with a somewhat dull effect. Messrs. J. CYPHER AND SONS were again first for 15 plants in pots not exceeding 10 inches, and of which not fewer than eight had to be in flower; there was no other exhibitor.

There was one group only in the class for tuberous-rooted and fibrous-rooted Begonias shown on a table space of 20 feet by 4 feet; it was shown by Messrs. BLACKMORE AND LANGDON, Twerton-on-Avon, Bath, who most deservedly secured the premier award. Notable among the varieties were Queen of the Belgians, Nurse Cavell, Mrs. W. Cuthbertson, Sir H. Wilson, Hilda Blake, General Joffre, Mrs. J. Davidson, Mrs. J. S. Brunton, F. W. Walker, Cicely, Jas. Braid and Black Knight.

Messrs. J. CYPHER AND SONS were first, Mr. W. R. MANNING second, and Mr. G. MACDONALD third for a collection of decorative plants and cut flowers, as shown on a table space of 6 feet by 4 feet, all exhibiting attractively. In the class for an arrangement of hardy border flowers on a ground space 25 feet by 7 feet, no duplicate or mixed lunches allowed, Messrs. HARKNESS AND SONS, Bedale, were a magnificent first, with Messrs. W. ARTINDALE AND SON, Sheffield, second. Mr. A. R. BROWN, King's Norton,

Birmingham, excelled in the class for an arrangement of Violas and Pansies; the flowers were very fine, and they were effectively displayed. Messrs. W. PEMBERTON AND SON, Bloxwich, followed closely; and Mr. J. HENDON, Walsall, third. Mr. CHAS. WALL, Bath, well deserved the first prize for a display of Carnations on a table space 12 feet by 4 feet; flowers and arrangement alike were excellent. Mr. C. WALL won for a smaller group also, and was followed here by Mr. H. WOOLMAN, Shirley, Birmingham.

Roses were numerous and brilliantly shown. These had large size, good shape and cleanliness as conspicuous attributes, and the exhibitors were sufficient in numbers to create keen competition. Messrs. HUGH DICKSON, LTD., won in the open class for 36 distinct, with fine blooms, including Coronation, Lyon, Geo. Dickson, Mrs. Jas. Lynas, Molly Bligh, H. V. Machin and Mrs. Bertram J. Walker. Mr. J. MATTOCK was second, and Mr. ELISHA HICKS third. In the class for five baskets of Roses, distinct, Messrs. HUGH DICKSON, LTD., were first, with Margaret Dickson Hamill, Nellie Parker, Red Letter Day, Oriflamme and Golden Emblem. Messrs. J. MATTOCK and E. HICKS were second and third respectively. For 12 new Roses, Mr. E. HICKS was first, Messrs. HUGH DICKSON, LTD., second, and Mr. J. MATTOCK third.

Mr. E. HICKS took the lead for a basket of a dark Rose with Hugh Dickson; Messrs. HUGH DICKSON, LTD., were second with General McArthur; and Mr. J. MATTOCK third, with George Dickson. For a basket of a light Rose, Messrs. HUGH DICKSON, LTD., were first with Caroline Testout; Mr. H. DREW, Longworth, second, with Irish Elegance; and Mr. J. MATTOCK third, with Mrs. H. Stevens.

In the class for 12 Teas, distinct, Mr. H. DREW was first with a somewhat weathered set; and Mr. E. HICKS second, with rather small blooms. Messrs. HUGH DICKSON, LTD., were first with a very fine exhibit in the class for 18 hybrid perpetuals, exhibition or otherwise, not more than seven stems of each variety, shown in separate vases; Mr. J. MATTOCK was second; and Mr. E. HICKS third. Messrs. HUGH DICKSON, LTD., maintained the lead in a similar class for nine varieties: Mrs. C. E. WHITCOMBE (gr. Mr. E. Teague), Bewdley, was second; and Mr. J. MATTOCK third. Mr. E. HICKS arranged a superb display in the class for a collection of cut Roses artistically arranged on a table space 20 feet by 4 feet; Messrs. J. MATTOCK and A. S. DENTON, Esq. (gr. Mr. L. Norton), were second and third is named. In a similar but smaller class, Messrs. E. HICKS, J. MATTOCK, and the DEVON ROSARY AND FRUIT FARM, LTD., were the prize-winners. In the Roses classes open only to gentlemen's gardeners and amateurs, Mr. G. SREIGHT, Market Harborough, was a conspicuous exhibitor; the classes throughout were keenly contested and the quality was good.

Sweet Peas were not nearly as numerous as we have seen at Wolverhampton, but notwithstanding signs of weather, the quality was good. Sir RANDOLF BAKER (gr. Mr. A. E. Usher), Blandford, was most successful exhibitor.

NON-COMPETITIVE EXHIBITS.

For many years Wolverhampton has been famous for the variety and magnificence of its exhibits shown "not for competition," and this year, despite untoward circumstances, its reputation was comfortably maintained. Pressure upon our space precludes detailed descriptions, and it must suffice to say that there was not a poor group in the show. Messrs. JOHN FORBES, LTD., had Phloxes, Delphiniums and Pentstemons; Messrs. THE DONARD NURSERY CO., shrubs in variety; Mr. H. N. ELLISON, Ferns; Messrs. REAMSBOTTOM AND CO., Anemones; Mr. A. R. BROWN, Carnations and Pinks; Miss THOMPSON, Cacti; Messrs. BAKERS, LTD., an admirably designed formal garden; Mr. W. WELLS, Junr., hardy flowers; Messrs. JARMAN AND CO., Roses and hardy border flowers; Mr. CHAS. WALL, Carnations; and Messrs. ED. WEBB AND SON, LTD., vegetables and Sweet Peas, the whole making one of the finest exhibits in the entire show.

LIVERPOOL HORTICULTURAL.

JULY 14 AND 15.—The executive of this Society determined to inaugurate a popular summer exhibition in which Roses, Sweet Peas and Carnations should form the major attractions; and the effort resulted in a highly creditable display.

Roses were not numerous, but were fresh and of good colour. For twelve hybrid Teas Mr. THOMAS LUNT took the lead; 2nd, Mr. PAUL LAYTON (gr. Mr. Joseph Lydiatt). For three vases of Roses, six blooms in each vase, equal 1st prizes were awarded Mr. J. BINGHAM (gr. Mr. A. Grindley), Aigburth, and Mr. W. BOND, Formby; for one round basket of Roses, Mr. C. J. PROCTER (gr. Mr. James Williams) won 1st prize; and for a bouquet of Roses Mr. W. BOND led; whilst Mr. H. MOSELEY had the best six blooms.

In the amateurs' section the first prize-winners were Mr. LOO THOMSON, Formby, for twelve blooms and for six trusses; Mr. A. F. BURTON, for two vases of cluster varieties; and Mr. A. F. BARTON, Handforth, for two vases of blooms shown as cut.

Carnations were well staged, Mr. W. E. WHINNERAY (gr. Mr. Ben Ashton), Neston, showing a pleasing half-dozen vases, three blooms for each, winning 1st prize. For one vase of twelve blooms, Mr. A. P. ECCLES (gr. Mr. E. L. Baker), West Kirby, was successful; whilst Mr. W. E. WHINNERAY led for one vase with excellent blooms of Baroness de Brien.

For twenty distinct varieties of Sweet Peas, Mr. J. BINGHAM (gr. Mr. A. Grindley), Aigburth, was placed 1st, and he also excelled for twelve distinct varieties. For a collection arranged for effect, two excellent sets were staged, Mr. R. WRIGHT, Formby, leading, and GARDEN SUPPLIES CO., Liverpool, following with a good display. In the class for nine vases, Mr. G. H. F. ROBERTSON (gr. Mr. Thomas Dutton), Wrexham, staged splendid blooms and was also first for nine vases. In the amateurs' section the 1st prize winners were Messrs. J. ROBERTS (two classes), and Mr. GUY BRADLEY, Hleswall.

For a collection of fruit, six distinct kinds, the Hon. W. HULME LEVER (gr. Mr. A. Roper), Thornton Hough, took the lead with Black Hamburgh Grapes, Waterloo and Lord Napier Peaches, and Blenheim Orange Melon; Mr. W. K. FERNIE (gr. Mr. W. Piper), 2nd.

For twelve vases of hardy, herbaceous cut flowers, Mr. JOHN BINGHAM won with well-grown specimens. For eight vases, Mr. JAMES GOULBOURNE, Formby, was 1st; while Mr. G. H. E. ROBERTSON had the leading six vases. Mr. J. GREEN, Neston, led in the class for four vases, for amateurs. Mr. A. B. SPENCE, Upton, had the best stand of double Begonias; and Mrs. BOND arranged the best table decoration in a strong competition.

Non-competitive exhibits were all from local firms. Gold Medals were awarded to Messrs. BEES, LTD., for a collection of Alpine plants, hardy flowers and Roses; to GARDEN SUPPLIES CO., LTD., for an imposing display of Sweet Peas; to Mr. C. H. TAUDEVIN, for a collection of Carnations and a rock and water garden; to Messrs. KER AND SONS, for a collection of Palms and stove and greenhouse plants; to Messrs. MIDDLEHURST AND CO., LTD.; and to Messrs. W. ROWLANDS AND CO., for a group of Hydrangeas. Messrs. JONES, Bros., were awarded a Silver Medal for a collection of hardy flowers.

PORTSMOUTH HORTICULTURAL.

JULY 14, 15, 16.—The above society held a flower show on these dates in aid of the Mayor of Portsmouth's Hospital Maintenance Fund. The Victoria Park, in which the exhibition was held, is well adapted for a flower show and the event proved a great success.

In the class for a group of miscellaneous plants arranged for effect, there were five exhibits. Messrs. J. B. GROOM AND SONS, florists, Gosport, were easily 1st with a light and pleasing group; 2nd, The PORTSMOUTH VICTORIA PARK COMMITTEE (gr. Mr. E. Soame). Ferns were well shown by Messrs. FAY AND SONS,

florists, Southsea, who won the 1st prize in a class for six well grown specimens. Fuchsias were shown well by the PARKS COMMITTEE, who secured the premier award. Begonias, Pelargoniums, and table plants were well represented in the various classes set apart for them.

Cut flowers were numerous and good. The best exhibit of 24 blooms of Roses was staged by A. R. REEVES, Esq., Gosport, whose best specimens were of the varieties Miss Willmott, Mrs. W. Morse, Mrs. Foley Hobbs and Gloire de Chédane-Guinoisseau. Mr. REEVES also excelled in the class for twelve blooms. Sweet Peas were a strong feature of the show, and Mr. DAMERUM, Hayling Island, Havant, was the premier prize-winner for these flowers.

Hardy flowers arranged in a space of 6 feet by 3 feet were staged by six competitors, Lady MARSHALL, Havant (gardener, Mr. G. Hoare), excelled with high quality bunches arranged lightly. Messrs. J. B. GROOM AND SONS, Gosport, had the best exhibit of Carnations.

Mrs. RAPPLEY, Bedhampton, had the most tastefully arranged dinner table, using pink Sweet Peas. Vegetables were meritoriously displayed by Lady MARSHALL, who won in the class for nine and six kinds respectively, with splendid Onions, Potatoes, Peas and Broad Beans.

Messrs. J. B. GROOM AND SONS, were placed 1st for a collection of fruit with good Grapes, Melons, Peaches and Nectarines.

Honorary exhibits added to the interest of the show. Gold Medals were awarded to Messrs. SUTTON AND SONS, Reading, for a magnificent exhibit of Sweet Peas; Messrs. S. FAY AND SONS, Southsea, for miscellaneous plants, cut flowers and floral designs; and Messrs. E. and E. SMEE, florists, Southsea, for Lilies, Begonias, Dahlias, Carnations and Tomatoes.

Silver Medals were awarded to Messrs. S. BIDE AND SONS, Farnham, for Sweet Peas, Messrs. HILLIER, Winchester, for cut flowers, hardy shrubs, clipped trees and Water Lilies, and Messrs. TOOGOOD AND SONS, Southampton, for vegetables.

Major CHURCHER, Alverstoke, staged an interesting collection of Gladioli, primulins, Messrs. J. B. GROOM AND SONS, Gosport, showed a collection of fruit and market plants.

NATIONAL ROSE.

Provincial Show at Leeds.

The provincial exhibition of the National Rose Society was held at Leeds on the 13th and 14th inst. On the whole the exhibition was a success, although certain of the classes were not so keenly contested as could be wished. As at the Metropolitan exhibition a special tent was set apart for seedling Roses, and this was visited by large numbers during both days. Five Gold Medals, one Certificate of Merit and five Cards of Commendation were awarded to novelties.

GOLD MEDAL ROSES.

Ethel James.—A single variety after the style of Isobel, but darker; shown by Messrs. S. MCGREY AND SON.

Hazelmark Scarlet.—A finely-shaped bloom of glowing scarlet colour, the blooms held erect on stout stalks, shown by Messrs. ALEX. DICKSON AND SONS.

Lady Inchiquin.—A new H.T. variety of rose-pink colour suffused with glowing cerise (see p. 24), shown by Messrs. ALEX. DICKSON AND SONS.

Marjorie Bulkeley.—A beautiful Rose of clear, pale-flesh pink colour, fully described on p. 24; shown by Messrs. HUGH DICKSON, LTD.

A Certificate of Merit was awarded to Mrs. Curnock Sawday, a fragrant, pink variety, shown by Mr. ELISHA HICKS.

Cards of Commendation were awarded to the following novelties:—J. G. Glasford, a crimson-scarlet variety, of great promise as a garden Rose, shown by Messrs. HUGH DICKSON, LTD.; Earl Haig, a clear crimson variety, shown by Messrs. ALEX. DICKSON AND SONS; Ariel, a variety of orange tinting, somewhat similar to Independence Day, but larger; and Adonis, suggestive of Mrs. David McKee, both shown by Messrs. BEES, LTD.; and Mrs. J. Wylie, a

large petalled variety of bluish colour, shown by Messrs. HUGH DICKSON.

NURSERMEN'S CLASSES.

In the class for 36 blooms, distinct, Messrs. HUGH DICKSON, Belfast, were awarded the 1st prize, and Messrs. F. CANT AND Co. the 2nd prize. The premier exhibit included choice blooms of Flame of Fire, Mme. Melanie Soupert, Mrs. J. H. Wylie and Premier.

For 48 Blooms Messrs. ALEX. DICKSON AND SONS were placed 1st, and Messrs. HUGH DICKSON 2nd.

Mr. GEO. PRINCE, Oxford, had the field to himself in the class for 24 blooms, distinct, and he was successful in the class for 12 blooms.

The best exhibit of new Roses was by Messrs. HUGH DICKSON, who showed the varieties Archie Gray, J. K. Allan and H. P. Pinkerton very finely.

The best basket of one variety of Rose was shown by Messrs. A. DICKSON AND SONS with superb blooms of George Dickson; 2nd, Messrs. HUGH DICKSON.

Messrs. A. DICKSON AND SONS also carried off chief honours in the class for five baskets of decorative Roses.

Messrs. BEES, LTD., had the best group of Roses.

AMATEURS' CLASSES.

Mr. F. DENNING, Leamington, showed the premier collection in the class for 24 blooms, distinct, followed by Mr. F. J. HARRISON, Ulverston, who was placed 1st in the smaller class for 12 blooms.

Mr. J. T. ROTHWELL, Romdhy, was adjudged the winner in the class for 12 blooms, distinct, and he was 2nd to Mr. W. G. BAINBRIDGE in the class for six blooms.

Mr. HARRISON had the best exhibit of nine blooms and Mr. BAINBRIDGE the best six blooms in the section for Tea and Noisette varieties.

The local Roundhay Society provided classes for Roses and other flowers, fruits and vegetables, which resulted in good competitions. Messrs. F. CANT AND Co. were awarded the 1st prize for Roses; Sir RANDOLPH L. BAKER the 1st prize for Sweet Peas, and Mr. T. M. PETCH, Great Horton, the 1st prize for Carnations.

Mr. W. E. CRABTREE, Sir JOHN McLAREN, Mr. STEPHEN SHACKLETON, Mr. A. SMITH, Miss E. OLIVER and Mr. E. WATERS also won 1st prizes in this section. The vegetable competitions were mostly among allotment holders of the district.

Obituary.

Thomas Bevan.—The news that Mr. Thomas Bevan passed away on Saturday, July 17, at 2.30 p.m., will come as a great shock to the wide circle of Metropolitan horticulturists to whom he was well known. Mr. Bevan was born in 1848 and commenced his horticultural career in 1862. In his youth he spent some time in the Royal Horticultural Society's Gardens at Chiswick, and was also employed in a horticultural establishment in France. At various periods he served as a private gardener, nursery manager, landscape gardener, surveyor and draughtsman, but he will be best remembered as Superintendent of St. Marylebone Cemetery, Finchley, a position he occupied for about thirty years and from which he retired only a year or so ago. He was a clever gardener and always made Chrysanthemums a great feature of the floral decorations of the Cemetery during late summer and autumn. He loved florists' flowers of all kinds, but Chrysanthemums were his chief favourites. He belonged to the old Stoke Newington Chrysanthemum Society, when it was a leading London association. Eventually he joined the National Chrysanthemum Society, with which body he was closely identified for upwards of a quarter of a century, being the chairman of its executive committee for a long period. Mr. Bevan always impressed upon young men the educational value of travel at home and abroad, and he was never happier than when visiting some important horticultural centre on the Continent, or acting as judge at Paris, Ghent, Lyons or

Turin. He was justly proud of the various awards he had received, notably the gold medal of the Royal Horticultural Society and of the Royal Botanic Society, and the diploma and Gold Medal he received at the Paris Exhibition of 1900. Mr. Bevan interested himself greatly in the activities of the Finchley and Highgate Horticultural and Chrysanthemum Societies, but he had interests outside those of horticulture. For many years he was a member of the Council of the British Beekeepers' Association, and an expert in apian matters. To the sacred cause of charity he devoted much time and energy, and as a result of his devotion he was appointed a member of the Council of the Hospital Saturday Fund and a governor of Brompton Hospital. Although one of the "old school" of gardeners and florists, Mr. Bevan always kept himself well informed in the progress of horticulture, and it was this fact, coupled with a genial disposition, that enabled him to make and retain so large a number of friends. A widow, son and daughter remain to mourn a great loss, but in their sorrow they have the deepest sympathy of all who knew and respected Mr. Thomas Bevan.

TRADE NOTES.

The firm of Ryder and Son, seed merchants, St. Albans, is to be converted into a public company with a capital of £150,000 issued in £1 shares at par. The directors are Messrs. Samuel Ryder, J.P., Marlborough House, St. Albans, Seed Merchant, Chairman and Managing Director; Charles George Davis, Gombards, St. Albans, Seed Merchant, Assistant Managing Director; William Arthur Conway, Romelandfield, St. Albans, Seeds Manager; Stanley Maidens Robinson, 8, North Terrace, London, S.W.3, Solicitor; and Thomas Seaton, 10, St. Peter's Street, St. Albans, Bank Manager. The business was founded at St. Albans by Mr. Samuel Ryder in the year 1897. In 1912 it was formed into a private limited company, having registered offices at 27, Holywell Hill, St. Albans. The directors intend opening a department for the sale of bulbs and plants. Mr. S. Ryder has agreed to act as managing director for seven years, at a salary of £1,000 per annum, and Mr. C. G. Davis as assistant managing director, for three years, at a salary of £1,000 per annum and 10 per cent. commission on the amount of profits in excess of £20,000 per annum.

From Messrs. Boulton and Paul we have received four samples of turnbuckles, each of a different pattern. They are of steel or steel and brass and would be suitable for straining wire on fences or against walls, much in the same way as raidisseurs are used. These turnbuckles are, we understand, left over material from the war, and consequently they are obtainable at a cheap rate.

We understand that in a recent trial of horticultural sundries carried out by the Royal Horticultural Society, the well-known insecticide, "Sox," manufactured by Messrs. Hawker and Botwood was highly commended.

THE cost of chemicals is increasing by leaps and bounds, and the gardener finds it more and more difficult each year to keep his expenditure in this direction within reasonable limits. The makers state, however, that the price of "Blighty," the spraying mixture prepared by the Mond Nickel Co., has not been advanced, but it is difficult to see how this position can be maintained. This fungicide commends itself to many growers by the fact that it is only necessary to add cold water to the dry mixture, after which it can be immediately used.

THERE are numbers of good weed-killers on the market, one of the best known being "Eureka," manufactured by Messrs. Tomlinson and Hayward. We are informed that one or two applications are usually found sufficient to destroy all weeds, and to prevent their reappearance for a considerable period.

ANSWERS TO CORRESPONDENTS.

BOTRYTIS ON TOMATOS: *F. G.* The collapse of the plants is due to an attack of Botrytis, the disease which usually appears in the absence of the preventive methods generally taken to guard Tomato plants against disease.

DELIVERY OF BASIC SLAG: *L. J.* We learn from the Ministry of Agriculture there is an impression in certain quarters that manufacturers are prohibited by the terms of the Equalisation Scheme from delivering basic slag to districts to which the costs of carriage would be more than a sum variously stated at from 7s. 6d. to 12s. 6d. per ton. This is not the case; the whole point of including the costs of delivery in the maximum price and of equally distributing the total costs among the manufacturers is to enable farmers in outlying districts to obtain their basic slag or sulphate of ammonia at the same price as those farmers who are fortunate enough to live near the works. In the case of sulphate of ammonia there has been no difficulty in obtaining delivery, but in the case of slag there seems to have been some misunderstanding from time to time. It is true that where the cost of delivery of basic slag exceeds 20s. per ton the consent of the Ministry has to be obtained, and that a maker may only send up to 25 per cent. of his output to districts to which the costs of carriage exceed 12s. 6d., but these limitations leave ample room for the supply of basic slag to all districts; so that if any grower is refused supplies on the ground that the costs of carriage to his place are too heavy, he should at once send full particulars to the Ministry of Agriculture at 72, Victoria Street, S.W.1.

FERTILISERS FOR PEARS UNDER GLASS: *F. J.* Of the manures mentioned in your letter, Thompson's or Le Fruitier are the most suitable for feeding Pear trees at this stage. Top-dressing also plays an important part in their culture, especially in dry borders. Thinning must be regulated by the size of the variety and condition of the tree; generally speaking, one fruit to a spur is enough. When Peaches fall before they are ripe it is a sign that there is something wrong at the roots, and as your tree made healthy-looking growth, it is probable that the soil is too light. If you cannot obtain such as is sufficiently retentive, dry a quantity of clay, pass it through a quarter-inch sieve, and mix it with the soil as you would mix sand, adding at the same time, steamed bone flour, wood ashes and old mortar. Young trees may be lifted when most of the leaves have ripened; older ones can have a considerable portion of the top-soil removed and replaced with new material as soon as the fruit is gathered. One of the nicotine preparations advertised by sundriesmen is best for destroying red spider and other insects.

MILDEW ON VINES: *W. G. C.* Your best plan will be to dust all affected parts of the vine with flowers of sulphur while the temperature of the vinery is between 80° to 100°. Spraying with liver of sulphur (½ oz. to 1 gallon of water) is also effective, but the purity of the sulphur cannot be always guaranteed.

NAMES OF PLANTS: *D. T.* 1, *Sidalcea*, probably *Sidalcea malvaeflora*; 2, *Polemonium Richardsonianum*.—*W. J. S.* Helixine Solierii.—*A. B.* 1, *Epilobium angustifolium* album; 2, *Salvia virgata*; 3, *Campanula carpatica* alba; 4, *Veronica spicata*; 5, *Stachys Betonica*; 6, *Campanula latifolia*.—*T. W.* 1, *Leucophyta Brownii*; 2, *Symphoricarpos racemosus* variegatus; 3, *Olearia Haastii*; 4, *Achillea Clavennae*; 5, not recognised; 6, *Centranthus ruber*; 7, *Santolina incana*; 8, *Lonicera japonica aurea reticulata*; 9, *Escallonia macrantha*.—*A. B.* *Lactuca hastata*.—*N. N.* *Hypericum Androsaemum*.—*E. D.* *Chrysanthemum maximum*, variety not recognised.—*J. J.* 1, *Primula obconica*; 2, *Achimenes Madame Jehune*; 3, *Hibiscus rosa sinensis* Cooperi; 4, not recognised, send flowers for determination; 5, *Acalypha obo-*

vata; 6, *Mariscus natalensis* (sometimes named *Cyperus natalensis*).—*S. W.* 1, *Juniperus chinensis*; 2, *Geranium Endressii*; 3, *Hemerocallis fulva*; 4, *Geranium grandiflorum*; 5, *Dianthus chinensis* var.; 6, *Polystichum distichum*.—*A. B.* 1, *Epilobium angustifolium* album; 2, *Campanula latifolia*; 3, *Veronica spicata*; 4, *Stachys Betonica*; 5, *Salvia virgata*; 6, *Podophyllum Emodi*.—*G. S.* 1, not recognised, send again; 2, *Diplopappus chrysophyllus*; 3, *Olearia Haastii*; 4, *Pittosporum undulatum*; 5, *P. Tobira*; 6, *Olearia stellulata*; 7, and 8, forms of *Veronica Andersonii*; 9, *Calycanthus floridus*; 10, *Phlomis frutescens*; 11, *Spiraea* sp.; 12, *S. Bumalda* var. *Anthony Waterer*; 13, *Abutilon vitifolium*.—*G. H. S.* 1, *Periploca graeca*; 2, *Iris* of the orientalis type, variety or species not recognised.—*A. N.* 1, *Ginkgo biloba*; 2, send again when in flower; 3, *Coriaria myrtioliola*; 4, *Elaeagnus pungens* var. *variegata*; 5, *Aristotelia Maqui*; 6, *Rubus australis*; 7, *Cercidiphyllum japonicum*; 8, *Spartium junceum*; 9, *Lonicera sempervirens*; 10, *Philadelphus coronarius*; 11, *Spiraea discolor*; 12, *Spiraea Bumalda* var. *Anthony Waterer*.—*R. L. H.* 1, *Juniperus chinensis* var. *albo-variegata*; 2, *Cupressus pisifera* var. *plumosa aurea*; 3, *Pernettya mucronata*; 4, *Spiraea Lindleyana*; 5, *Euonymus japonicus* var. *microphyllus*; 6, *Cotoneaster Simonsii*.

NARCISSUS POETICUS FL. PL. FAILING: *R. B.* The plants are suffering from "blindness," which is due to imperfectly developed flower-buds in the spring of 1919. In the *Narcissi* the embryo flower-bud is formed practically a year in advance of the flowers appearing, and is only perfected when soil and climatic conditions are favourable. In unfavourable conditions an imperfect flower-bud is formed, and the so-called "blindness" results. In your case the sandy soil is opposed to success. The variety sent is a moisture-loving one, and is only to be successfully grown in stiffish loams that are either consistently cool or moisture-holding. It is also impatient of disturbance and should be planted where it may remain permanently. It should also be planted deeply—not less than 6 inches below the surface in any case. In rich, moderately heavy and cool or moist soils, shade should be avoided. We have seen the variety at its best at the pond-side, where, cool or moist at all times, it was often under water in winter. If you can provide similarly cool or moist conditions, lift and replant the bulbs at once. Do not dry them off. The changed conditions may not give you perfect flowers in 1921, as these are dependent upon the conditions of growth and its maturing in the present year.

PEACH FRUITS NOT STONING: *A. W. S.* No doubt the previous neglect of the trees is a contributory cause, but the failure of the fruit to stone properly is generally due to lack of lime in the soil. Lime should be applied in the form of top-dressings at intervals, but no application is likely to assist the present crop.

PEACH LEAVES FALLING: *A. S.* The premature fall of the leafage may be due to drought, or to disease, but the cause was not determinable from the specimens sent; leaves should have been forwarded at an earlier stage.

PLUMS DISEASED: *B. B.* The Plum trees are affected by the Brown Rot disease (*Sclerotinia cinerea*). Cut out and burn all dead wood and also remove any "mummified" fruits on the tree.

POTATOS WITH HARD SETS: *J. G. C.* The failure of your Potatoes to develop satisfactorily is owing to the seed having been over-ripe. Next season obtain seed tubers that have been specially grown and prepared for planting.

PROPERTIES OF THE LESSER GOATS' BEARD: *C. G. A.* The plant sent was *Tragopogon pratense* minor (Lesser Goat's Beard). The juice is milky and the properties similar to those of the Dandelion. It is not poisonous,

because *Tragopogon porrifolius*, with purple flowers, is the Salsify or Salsafy of gardens, cultivated for the sake of its roots, which are cooked and eaten. At the same time either of the above might be deleterious to milk, giving it a bad taste. The plant sent is the most common in Britain and often occurs in large quantity in meadows and other grassy places. Cows readily eat the juicy leaves and stems, more especially before flowering. The stems of *T. porrifolius* are sometimes cooked as a substitute for Asparagus, and are not unwholesome. Turnips are deleterious to milk if given in too large quantities to milch cows without a due proportion of straw.

PROPAGATION OF CEANOTHUS: *B. H.* *Ceanothus* may be propagated by means of cuttings of firm, young wood inserted in sandy soil and placed in gentle heat during July or August.

RASPBERRY CANE ATTACKED BY FUNGUS: *L.* The terminal portion of the young Raspberry cane has been attacked by a fungus named *Hendersonia Rubi*, or some other species of the genus. All canes the bark of which is turning black, or occasionally some of the young leaves as well, should be cut and burnt to destroy the spores at an early stage of the disease. The whole of the plantation should then be sprayed with a weak solution of Bordeaux mixture, say 6 pounds of sulphate of copper (blue stone), to 4 pounds of quicklime and 50 gallons of water, or any lesser quantity in the same proportions, according to the size of the plantation. Possibly the disease could also be controlled by using 1 ounce of sulphide of potassium to two or three gallons of water. Both fungicides are meant as a preventive, not a remedy to already diseased canes.

RED-FLOWERING, HARDY, EVERGREEN SHRUBS: *A. G.* As you are unable to plant *Rhododendrons* or other *Ericaceous* shrubs owing to the nature of your soil, we should advise you to use variegated evergreens such as *Elaeagnus* and *Conifers* for the vases, as, beyond *Rhododendrons*, there is no red-flowered evergreen shrub suitable for your purpose. Practically all the other evergreen shrubs bear white flowers, and some of these are insignificant. *Escallonia macrantha* bears red flowers in May, but we do not think you would find it at all satisfactory.

RUST ON TOMATO LEAVES: *F. T.* The "rust" on the Tomato leaves is evidence of the presence of a fungus named *Cladosporium fulvum*. Cut away and burn the worst affected leaves and spray the plants with a solution of sulphide of potassium or weak Bordeaux mixture. When this disease is of common occurrence spraying with sulphide of potassium solution should commence as soon as the plants are placed in their permanent quarters and be continued fortnightly. When spraying is carried out the fruits should be carefully wiped before being eaten or cooked.

STREAK DISEASE OF SWEET PEAS: *C. S. and Co.* and *J. D. H.* The plants are suffering from an attack of *Thielavia basicola*, and should be burnt. This is a somewhat common disease among Sweet Peas, and one which appears to be aided by cold and wet weather. In the one case (*C. S. and Co.*) spores of the fungus were present, and in the other mycelium was found on the roots. The soil in which the seeds are to be sown should be sterilised by adding commercial formalin mixed at the rate of 1 pint of formalin to 12½ gallons of water, using ¾ gallon of the solution to each square foot of soil. After this treatment the soil should be covered with sacking for a couple of days to keep in the fumes of the formalin, and at least a week should elapse after treatment before sowing or planting is commenced.

Communications Received.—*H. Van O.*—*A. and W.*—*M. N. S.*—*W. R.*—*I. L. R.*—*A. G.*—*C. E. P.*—*G. W. S.*—*J. H.*—*H. H. M.*—*A. H. B.*—*H. B. T.*—*J. S. B.*

THE Gardeners' Chronicle

No. 1753.—SATURDAY, JULY 31, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.14°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, July 28, 10 a.m.: Bar. 30.0; temp. 62°. Weather—Dull.

The Agricultural Bill and Nurserymen.

Under Part 1 of the Agricultural Bill it is proposed to make permanent the temporary provision of the Corn Production Act, 1917, including the provision as to agricultural workmen and the enforcement of proper cultivation. In clause 17 (1) of the original Act, 1917, the expression "Agriculture" is defined for the purposes of that Act as including the use of land for grazing, meadow or pasture land, or orchard, or Osier land, or woodland, or for market gardens, or nursery grounds, so there can be no doubt that all that is laid down in Part 1 of the Bill applies to nursery grounds. Inasmuch as it is proposed to make the Wages Board a permanent body under the Bill, the nurseryman will no longer be able to negotiate terms with his employees but the wages will be controlled by that official body. Freedom of planting and management of cultivation were considered essential factors to the nurseryman in his industry—bulbs, flowers and forest trees or fruit tree stocks were planted in quantities only influenced by the demands of the market. With the passing of the Corn Production Act, 1917, this freedom was taken from him, and the nurseryman was at the mercy of the County Committee as to his arrangements for cropping and methods of cultivation—though the Committees had little cause to complain of the latter. Many nurserymen, however, have cause to remember that Agricultural Committees were invested with very wide powers under this Act whereby for the purpose of increasing the production of food they might decide the use to which the land should be put. The wisdom of giving such powers to Agricultural Committees in times of stress has often

been doubted: their continuance in times of peace would have been folly, and the Ministry of Agriculture is wise in suggesting in the Bill substantial amendments. It is now proposed that orders for a change in cultivation shall only be made where they are "not calculated to affect injuriously the persons interested in the land" and the right to appeal to an arbitrator is provided to determine whether the order has been properly made. Few nurserymen would have but little difficulty in defending their position as regards the cropping of their land; nevertheless, it is as well to remember that County Committees will still possess some powers in this matter. The second part of the Bill contains amendments of the Agricultural Holdings Act, 1908. In effect it is proposed to give security of tenure to a tenant under certain conditions so that the tenant, on disturbance, would be compensated for any improvements. As regards market garden improvements the Bill contains provisions enabling the Agricultural Committees to apply to a holding or any part of a holding, the conditions comprised under the term "the Evesham Custom." So much depends on the meaning of the expression "holding." In the original Act, 1908, "holding" is defined as any parcel of land held by a tenant, which is either wholly agricultural or wholly pastoral, or in part agricultural, and as to the residue pastoral, or in whole or in part cultivated as a market garden, and which is not let to the tenant during his continuance in any office, appointment, or employment held under the landlord. A market garden means a holding cultivated wholly or mainly for the purpose of the trade or business of market gardening. This clearly shows that whilst market gardens are included, and thereby the tenant will reap the benefits of the increased security of tenure, nursery grounds are not mentioned, and though no judicial care has been taken to decide the point, it appears that nurserymen will not be entitled to receive any benefits under Part 2 of the Bill.

Allotment Holders' Tenure.—The Standing Committee of the House of Commons in charge of the Agriculture Bill has passed an amendment which should go far to satisfy allotment holders on the subject of the tenure of their holdings. The amendment is to the effect that 12 months' notice to quit should be the standard of tenure. Another amendment, however, determined that where land is required by the Admiralty, War Department, or the Air Council, or where land was acquired by railway companies or other corporations for the purpose of their undertakings, 12 months' notice should not be required.

Bulb-growing in the United States.—At the present time the value of bulbs—Narcissus, Tulip, Hyacinth, etc.—produced in the United States is almost negligible in comparison with that of imported bulbs; and the object of the Bulletin on Commercial Dutch Bulb Culture in the United States, published by the U.S. Dept. of Agriculture, is to encourage the more general growing of bulbs. The Bulletin consists of a brief sketch of methods of cultivation of the chief bulbs of commercial importance.

Wheat Growing in France.—All friends of France will be pleased to know that the French Ministry of Agriculture is taking active steps to increase the yield of Wheat. It is a remarkable fact that, whereas French cultivators are among the finest in the world, French farming, judged by the average yields of the chief crops, is below that of several neighbouring countries. The need for raising the average of the Wheat yield is the more apparent in that there are several million fewer acres under Wheat in France now than there were before the war (11,816,000 now, as compared with from

13,545,000 to 15,735,000 pre-war). The average yield works out at 13 bushels per acre, and the great object of the Ministry of Agriculture is to increase this yield by better tillage and by the selection of higher yielding varieties.

Onion Smut Order.—The Onion Smut Order, May 4, 1920, issued by the Ministry of Agriculture under the Destructive Insect and Pest Act, requires that no person shall sow Onions in an infected place, i.e., in a place in which Onion Smut—due to *Urocystis cepulae*—has been found to occur. Onions grown in an infected place shall not be removed until inspected and certified as free from Smut and washed free from soil. Onion plants visibly affected with Onion Smut shall not be sold or offered for sale for any purpose. Outbreaks of the disease must be notified to the Ministry. Copies of the Order may be obtained free from the Ministry of Agriculture, 4, Whitehall Place, S.W.

Solid Formalin as an Insecticide.—According to an announcement in the *Times* of July 22, Mr. Roubaud, of the Pasteur Institute of France, has discovered that powdered formalin sprinkled on the surface of water in which mosquito larvae are present, is a sure means of destroying them, and hence of reducing the risk of malaria. The method by which the specific is said to act is interesting. The habitual food of mosquito larvae consists in minute solid particles, and hence they infest the particles of powdered formalin. These latter give off gaseous formalin in sufficient quantities to poison the larvae which have swallowed grains of solid formalin. The reflection immediately arises, may not this specific be used in horticulture for the purpose of destroying other pests. It would certainly seem likely that this preparation of formalin may prove a valuable addition to the list of stomach-poison insecticides. It is to be hoped that tests will be made in this direction and also to ascertain whether in its solid state formalin may not prove even more efficacious as a soil steriliser than it is in the liquid form.

Orchid Tent at Chelsea.—Since the note appeared in the *Gard. Chron.* of June 19, p. 305, under the above heading, we have had communications from several of the largest exhibitors of groups of Orchids, all agreeing that a special tent of large size devoted entirely to Orchids could be made a fine feature in the Great Spring Show of the Royal Horticultural Society, if proper accommodation to display the exhibits is given. Most of the exhibitors say that in the matter of side staging a depth from front to back of 7 ft. is ample. Beyond that depth effective staging and attendance to the plants during the show is difficult. A liberal extent of frontage is the desirable point, as it allows of artistic arrangement without crowding the plants.

Ormskirk Potato Trials.—The summer inspection of the growing crops of Potatoes planted at Ormskirk for trial will take place on August 10, 11, 12 and 13. Inspection on the first two days is by invitation from the Ministry of Agriculture and from the National Institute of Agricultural Botany, but the trial grounds will be open on the 12th and 13th to all interested in Potato growing. The trials, which in the past have been entirely under the direction of the Ministry of Agriculture and have been carried out in the grounds of the Ormskirk Institution, kindly loaned by the Guardians for that purpose, have now been transferred to the farm at Lathom, Ormskirk, recently purchased by the National Institute of Agricultural Botany. The Ministry retain responsibility for testing Potatoes for susceptibility to or immunity from wart disease, and have extensive plots of Potatoes planted on the farm for this purpose, including a large number of varieties from America, France, South Africa and New Zealand. They have also a considerable number of seedlings from breeding institutions, Potato raisers and others. Trials for other purposes will be carried out by the National Institute of Agricultural Botany, which this year has planted a very large number of demonstration plots of most commercial kinds of immune varieties of Potatoes.

Memorial to the late Dr. J. H. Wilson.—A meeting in connection with the proposed memorial to the late Dr. J. H. Wilson, of St. Andrews, was held on July 22, in the showyard of the Highland and Agricultural Society at Aberdeen. Mr. J. Roger, Balgove, Fife, occupied the chair. It was reported that a sum of about £100 had been subscribed towards the memorial. It is suggested that the money subscribed should be applied towards founding an annual prize for the encouragement of the improvement of farm plants by private individuals. It is also suggested that the prize should be offered in connection with the proposed plant-breeding station in Scotland.

Bradford Chrysanthemum Society.—The Committee of the Bradford Chrysanthemum Society are reviving their annual exhibition this year. They much deplore the fact that they have not been able to secure a hall for more than one day, and so will have to be content with Friday, November 12. The Society is in a good financial position, and £70 is offered in prizes for cut blooms in open competition, in addition to £50 for local classes. The Lord Mayor, as President, is giving a silver cup for local competition. Gold medals, valued at 10 and 7 guineas respectively, will be offered for trade exhibits. Prior to the War, the Bradford Society held some very successful shows, and attracted the leading competitors of the country.

The Corn Crops of North America.—The International Agricultural Institute at Rome estimates the yield of Wheat in the United States at 101,130,000 quarters, or 14 per cent. less than in 1919 and 2 per cent. below the average production of the five previous years. This is an increase of nearly three and a half million quarters over the estimate made a month ago. In Canada the yield is estimated at 37,690,000 quarters, or 56 per cent. greater than in 1919, but only 18 per cent. above the five years' average. The yield of Barley in the United States is expected to amount to 23,160,000 quarters, or 16 per cent. more than the 1919 crop, but 10 per cent. below the average of the previous five years, whilst in Canada the prospective yield is estimated at 8,080,000 quarters, or 19 per cent. more than last year and 24 per cent. above the average. The Oat crops are also favourably reported on, that of the United States being estimated at 135,590,000 quarters (6 per cent. above 1919 and 7 per cent. below average), and the Canadian crop at 58,270,000 quarters (36 per cent. above last year and 29 per cent. above average). Rye is expected to produce 9,570,000 quarters in the United States, or 7 per cent. less than in 1919, whilst in Canada the comparatively large yield of 1,480,000 quarters is anticipated, which is 24 per cent. greater than last year.

Interesting Visitors at the R.H.S. Meeting.—Among the numerous visitors at the meeting of the Royal Horticultural Society there were four from the United States. Mr. E. G. Hill, of Indiana, one of the foremost rosarians in America, has been in England some time, and was present at Vincent Square on Tuesday last. With him was Mr. Charles H. Totty, one of the best-known horticulturists in the United States. We also met Mr. James Macfarlane, formerly in the Chiswick Gardens of the R.H.S. and now instructor in floriculture at the New Hampshire College, Durham, New Hampshire. The fourth "gentleman from America" we met was Mr. E. H. Wilson, whose success as a collector of plants in China and Japan is well known to our readers. As already announced in these columns, Mr. Wilson is on a journey round the world, seeking new and interesting plants for the Arnold Arboretum.

Management of the Royal Horticultural Society's Exhibitions.—It is a matter of common knowledge that the bulk of the trade exhibitors are not satisfied with the management of the R.H.S. exhibitions; it is also well known that meetings of exhibitors have been held whereat grievances were ventilated. As an outcome of these meetings, the Council of the Royal Horticultural Society was asked to receive a deputation of exhibitors; is agreed and the

meeting took place on Tuesday, the 27th inst. The deputation, led by Mr. R. W. Wallace, was welcomed by Lord Lambourne, and those who acted as spokesmen were Messrs. G. W. Leak, W. Cutbush, G. Waterer, G. Whitelegge, W. Laxton, J. McBean, and C. H. Curtis. Question of tickets, allotment of space, judging, ventilation, catering, carriage, water supply, and facilities for the Press were all brought forward, and the Council was asked to co-opt on its Exhibitions Committee a certain number of regular exhibitors. Lord Lambourne stated that the matters brought forward would receive the fullest consideration of the Council.

Cork Industry in Portugal.—Of the total estimated production of cork, weighing 396,832,000 lbs., Portugal produces 45 per cent., compared with 30 per cent. in Spain, 20 per cent. in Algeria and Tunis, and 5 per cent. in France and Italy. Although Portugal occupies the premier position at present, it is expected that the forests of Algeria and Tunis will yield much larger quantities of corkwood in the future. The principal use to which the cork is put is the making of cork stoppers and cork discs: the linoleum trade uses considerable quantities of cork waste and also much virgin corkwood. The principal importers of Portuguese corkwood are: England, which imports ready-made cork stoppers, France, South America, United States, and Germany. They import chiefly corkwood, and the cork stoppers are made in the importing countries.

Royal Gardeners' Orphan Fund.—We are asked to announce that Mr. Brian Wynne, 19, Bedford Chambers, Covent Garden, W.C.2, who has been secretary of the Royal Gardeners' Orphan Fund for the past 21 years, and is widely known in horticultural circles, is in no way connected with the person bearing the same surname who was recently convicted for embezzlement.

Forestry Exhibition at the "Highland."—The Highland and Agricultural Society of Scotland, which held its annual exhibition this year on the 20th, 21st, 22nd, and 23rd inst., at Aberdeen, deserves well of forestry, and all that pertains to the science. So far back as 1784, this worthy Society set out to promote afforestation in Scotland. Backed up by the leading Scottish landowners, who foresaw the value of timber as a national asset, millions of trees were planted, and how well their labours have been repaid the years of war emphasised. For many years the Royal Scottish Arboricultural Society have enjoyed the hospitality of the "Highland" showyard in which to hold their annual exhibitions. The show this year was smaller than on some former occasions, but what it lacked in quantity it made up for in quality. The Earl of Mansfield (per Wm. Leven), Scone, gained first prize for Scots Pine (*Pinus sylvestris*), Norway Spruce (*Picea excelsa*), Larch (*Larix europæa*), Oak (*Quercus robur*), and Ash (*Fraxinus excelsior*). Specimens demonstrating the beneficial effects of good and bad pruning formed a very instructive section, and Mr. H. R. Munro, Estate Office, Charboro Park, Wareham, Dorset, was awarded a Silver Medal for an exceedingly fine exhibit. Mr. Munro was also awarded a Silver Medal for a collection of Fungi injurious to forest trees and shrubs. The following awards were also made:—Nurseries and plantations (restricted to Aberdeen show district).—Nurseries: Best managed estate nursery, not exceeding two acres, Silver Medal, Mr. A. F. Irvine, of Drum, Aberdeenshire. Plantations: Best young plantation, mainly of Conifers, not fewer than five acres in extent, and not exceeding ten years of age—Silver Medal—Captain Gammell, of Countesswells, Aberdeenshire; Bronze Medal, Mr. A. F. Irvine. Plantation not exceeding 20 years of age—Bronze Medal—Lord Leith of Fyvie, Aberdeenshire. Plantation not exceeding 40 years of age—Gold Medal—His Majesty the King, Balmoral Castle; Silver Medal, Lord Leith of Fyvie. Messrs. A. and J. Paterson, Banchoy, near Aberdeen, were deservedly awarded a Gold Medal for a splendid series of exhibits of home-grown woods, and their product, embracing trees of splendid

growth and dimensions, graded pitwoods, railway timbers, scantlings, and various manufactured articles, including a completely equipped sectioned cottage. Messrs. John Bisset and Sons, Ltd., Aberdeen, were awarded a Silver Medal for a well-made furnished hut of special design. Messrs. Smith and Son, nurserymen, were awarded a Silver Medal for a model and plan of Bell's new safety kiln for extracting tree seeds from cones without risk of injury by overheating. Mr. John Maughan, Estate Office, Jervaulx Abbey, Middleham, Yorkshire, had a very interesting exhibit, named the Arbormeter—a timber calliper by which the quarter girth and diameter of a standing tree may be taken at a height of 15 feet. Mr. Maughan was awarded a Silver Medal for his exhibit. A wonderfully simple, yet thoroughly practical lever-releasing planting frame was shown by Mr. A. Murray, Dregghorn Mains, Colinton. Mr. Murray was awarded a Silver Medal for this exhibit. A like honour was given Messrs. Ben Reid and Co., nurserymen, Aberdeen, for their canvas shelter, 10 feet by 6 inches, showing at work hinged transplanting boards for lining-out forest tree seedlings. Messrs. James Allan and Co., Aberdeen, received a Silver Medal for a fine collection of furniture made from home-grown timber. The Aberdeen University and North of Scotland College of Agriculture, under the direction of Mr. Peter Leslie, B.Sc., lecturer in forestry, had some exceedingly fine and instructive collections illustrating insects and fungi inimical to the growth of trees.

Appointments for the Ensuing Week.—Monday, August 2—Chippenhams Horticultural Society's Show; Heathfield and District Horticultural Society's Show; Rutland Horticultural Society's Show. Tuesday, August 3—Walsall Floral and Horticultural Society's Show; Northampton Municipal Horticultural Society's Show (three days); Scottish Horticultural Association meet; Leicester Horticultural Society's Show (two days). Wednesday, August 4—Scottish National Sweet Pea, Rose, and Carnation Society's Show. Thursday, August 5—Aberdeen Royal Horticultural Society's Show (three days). Friday, August 6—Killearn Society's Show.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Saving Seeds.*—It has often occurred to me that sufficient care has not been exercised in saving seed of vegetables from the finest parts of the crop. If we breed livestock, of whatever kind, we invariably select the parents from the best of our flock or stud. So, with regard to flowers, no one would sow seed from inferior flowers, but would select from the best specimens; and it is by following up this system (even without more crossing than is performed by Nature and the bees), that great improvements have been made. Thinking the same effects would accrue from a more careful selection of culinary seeds, and that a much greater degree of productiveness might be attained, about three years ago I began an experiment with long-pod Beans; I carefully selected the finest and fullest pods for seed, taking none with fewer than five Beans in each. Next year I had a good sprinkling of pods with six seeds in each; these were saved for seed. The following year there were many six-seeded pods and some with seven. Following up the same plan, I find this season many more six and seven-seeded pods than of a less number, and some with eight seeds! There are still a few plants which produce five-seeded pods, and it is worthy of remark, that the five-seeded plants have seldom a six-seeded pod upon them, but all five; on the contrary, the six-seeded plants generally have all the pods bearing six Beans or more. As the seed-saving season is now coming on, perhaps these hints may induce others to adopt the plan. If the same thing were adopted with our corn crops, by selecting a few of the largest and best-filled ears to save as seed, I have little doubt more productive varieties might be procured. In my younger days I once gathered an ear of Barley which had 22 grains on each side; surely the produce from seed of this description would yield a far better crop than such as is frequently sown. *Lusor, Gard. Chron., August 2, 1845.*

THE ROSARY.

THE NEWER RAMBLING ROSES.

I REGRET to state that some of the newer rambling Roses I have tried possess little merit as compared to those of earlier introduction, such as the various forms of Dorothy Perkins. This variety is still recognised as a desirable type, possessing all the attributes of growth and freedom of flowering found in a first-class rambling Rose.

Emily Gray, as I have grown and seen it in other gardens, is very disappointing, as most of its blossoms are produced singly and sparsely. The colouring is very desirable—golden-yellow, with a deep orange shading in the bud stage, while the habit of growth is all that could be desired, and the shoots are furnished with large, deep green leaves which, in their earlier stages, are bronze-tinted.

Purity is a hybrid Wichuraiana variety of extra strong growth, with handsome leaves. In this, again, the blossoms are few in number, the clusters containing four to six flowers. Individually the blooms are four inches in diameter with a double row of petals and a central boss of stamens. As its name implies, the colour is pure white; in fact, I do not know any other white Rose that so well deserves the name of Purity.

Romeo is a rapid-growing Wichuraiana Rose, producing clusters of Liberty-coloured blossoms. As a Rambler this may prove effective, if its shapely flowers are produced freely enough.

Shalimar is a sport from the well-known Minnehaha, producing huge panicles of light flesh-coloured blooms and, like its parent, it is vigorous in growth.

Paul Noel reminds me somewhat of a pale coloured Francois Juranville, with an ampler shade pervading the surface.

Chatillon Rambler gives large trusses of pale pink flowers; it is a strong grower but subject to mildew.

Steil Rambler is a strong grower with large leaves and clusters of deep rose-red blossoms. It should be a desirable variety if free flowering.

Dr. Henri Meupreiz is an extra strong growing Wichuraiana variety. The buds are deep yellow and quickly fade to dull white.

Edgar Audrien is a desirable novelty of moderately strong growth. The blossoms are large, blood red in colour, changing to crimson.

Gruss an Irenandorf is rather a weakly grower with me, and gives clusters of dark red flowers with a deep velvety suffusion over them. This is certainly a desirable variety.

Graffin Ada Bredon has large drooping trusses of pale pink blossoms, followed by prettily coloured clusters of brighter pink.

Petit Louis is thought by certain growers to be an improvement on Dorothy Perkins, but I do not think it is better. The colour is bright pink, but the shade fades too quickly to allow the blooms to remain effective for long.

Galaxy is a strong growing Wichuraiana Rose with blooms of a bright red colour.

Pemberton's White Rambler grows well and produces its flowers freely in neat trusses, but the purity of colour is not equal to that of some other sorts, notably Sander's White, which I have growing alongside it.

Amethyste, as noted in my list of early flowering varieties in the issue of July 3, is a very desirable Rambler Rose. *E. Molyneux, Bishops Waltham.*

SOME GOOD GARDEN ROSES.

THE present is a suitable time to determine the merits of varieties of Roses with a view to future planting. Tea Roses should predominate in the formal Rose garden, as they produce a profusion of delicately scented and variously tinted blooms over a long period; they are also exceedingly useful as cut flowers. Climbers of this type lend themselves admirably to the clothing of warm walls and cosy corners. All sections of the Rose should obtain in the flower garden; not necessarily as a collection apart, but as a pleasing embellishment of the garden at different points and in different modes. Of

the many bedding varieties grown here—a very exposed district—none of the newer kinds tried has, so far, surpassed Lady Battersea in point of consistently long blooming; although many are less liable to mildew. Golden Emblem, Golden Ophelia, Flame of Fire, Rayon d'Or and Madame Edouard Herriot are all flowering profusely; on this point it is difficult to discriminate. K. of K. has not taken kindly to the position, but the velvety sheen of its dazzling scarlet petals is very pleasing. The Queen Alexandra Rose should be grown by all; it is a magnificent bedder and the blooms are very attractive when seen in artificial light. The freely produced and faultless blooms of Gladys Holland are sweetly scented and the growth is good. Mermaid, a Rambler having large single, sulphur-

CULTURAL MEMORANDA.

TO HASTEN GERMINATION OF PAEONY SEEDS.

RAISERS of Paeony seedlings often experience difficulty in obtaining good germination of the seeds; for, although immature Paeony seeds germinate fairly readily, fully matured and dried seeds are often extremely slow in sprouting. Experiments made by Prof. L. C. Glenn* indicate that treatment of dried seeds with strong sulphuric or hydrochloric acid hastens germination to a marked extent. The best results were obtained by soaking the seeds for one hour in strong sulphuric acid. Another and less drastic

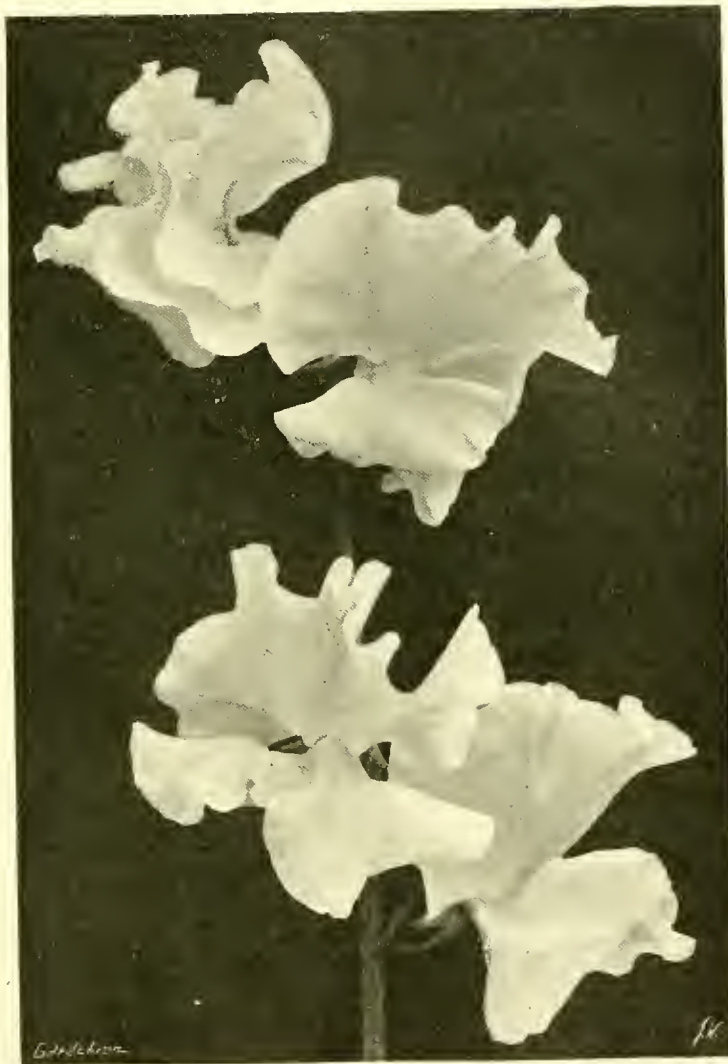


FIG. 26.—SWEET PEA PICTURE; COLOUR, CREAM-PINK FAINTLY SUFFUSED WITH APRICOT-ORANGE.

R.H.S. Award of Merit, June 1, 1920. This beautiful variety was shown well by the raiser, Mr. Robert Bolton, at the National Sweet Pea Society's exhibition on the 23rd inst. (see p. 63).

yellow flowers makes an excellent pillar Rose. Well-grown Rose hedges make splendid screens and dividing lines; as such, their utility might be more frequently considered. A large belt of *Rosa rugosa* Blanc double de Combert, with a drift of *Tanarix hispida acuticulis* in the foreground, seen from an elevated point has a distinctive charm. *R. rugosa* is most useful for planting on the outskirts of flower gardens. In southern gardens the beautiful Noisette Rose William Allen Richardson makes a charming hedge, and the extension of the branches naturally seems to result in greater freedom of flowering. This sort should have a south aspect. For a north hedge none surpasses Gruss an Teplitz, one of the best of Roses for all garden purposes. *S. Legg, Warter Priory, Yorkshire.*

method in securing rapid germination has been applied by Mr. E. P. Wheeler (*op. cit.*). It consists in planting the seeds immediately they are ripe, in good soil in a cold frame. After a thorough watering, the surface of the soil is covered with burlap, which is also wetted, and then the sash is put on and covered with canvas. As a result of this method—whereby a saturated atmosphere is secured—Mr. Wheeler found that when the frames were uncovered, in March, 50 per cent. of the seeds had germinated and many had produced seedlings one inch in height. This method may prove useful in the case of other seeds that germinate slowly.

* Bulletin of Peony News, No. 12. Published by the American Peony Society. May, 1920.

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warton Priory, Yorkshire.

Bellis.—Crown-flowered Daisies that were divided last spring may be again increased by pulling the plants to pieces and dibbling the portions in the soil, four inches apart. Division of the plants and transplanting them twice in one season, on rich ground, is a means of obtaining extra fine flowers.

Topiary.—The excessive rainfall has favoured the growth of evergreens and the shears may consequently be used somewhat earlier this season. The feeding of the roots should be discontinued before clipping the new growths into the desired shape. Large-leaved subjects should be trimmed with a knife. Where practicable, burn the clippings on the spot and use the ashes to nourish plant life at close quarters.

The Bog Garden.—Stepping-stones in the bog garden which have become loosened should be levelled and made firm. The picturesque and truly Japanese mode of placing the stones in lines of threes is commendable. Should the water be at all stagnant, it is advisable to cut a deep trench at the lowest point of the garden and let the water pass away. Afterwards, regulate the overflow, by filling the trench to the desired height with "puddled" clay. The sides of elevated beds, needing support, may be kept in position by large, rough stones, or failing these, Oak piles may be utilised in an informal way. Bridges, where required, are easily formed of natural tree trunks and may be furnished with rustic hand-rails. If not already done, the curtailing of strong-growing subjects should receive attention.

Climbers.—Attention to watering and feeding the roots, tying and regulating the growths of various climbing subjects should not be overlooked. Varieties of Buddleia, such as *B. variabilis*, are easily damaged by strong winds, and the display of blooms is thus impaired if the shoots are not properly secured. Wistarias require regulating, and shoots not required for extension or furnishing may be shortened to within six or eight inches of the stem. This treatment also applies to standard Wistarias and is conducive to free blooming the following season. Where it is desired to increase varieties, the basal shoots may be retained for layering. Long growths on cordons of *Laburnum Vossii* should be pinched to insure mature basal buds, which will produce fine racemes next spring. Horizontal cordons of *Laburnum*, growing on 7 feet stems and trained to a pergola, are very attractive when in flower. Where practicable, a portion of this season's flowering wood may be cut clean out from Clematis, montana to allow strong, young shoots to develop. Large flowered Clematis, such as *C. Jackmanii*, require constant training to prevent entanglement of the young bine. Strong growing species of Vitis, like those of *V. armata*, need support in some positions; if fine architecture is present, a certain amount of growth should be curtailed in an irregular manner. Test the ties and supports of standard Honeysuckles, as the heads become very heavy after rains. Honeysuckles are worthy of extended cultivation in standard form and associate well in Rose gardens of informal design. Many climbing plants may be kept in bounds on pillars and rustic work by making simple ties with thin Willow shoots.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Early Pruning of Raspberries.—Immediately after the fruit is gathered remove the old canes entirely to their base, also the weaker ones of the current year's growth. This treatment tends to secure a more perfect ripening of those canes retained for next season's fruiting, and

also prevents any waste of the plants' vigour. The new growths should be trained either to stakes or wires, whichever method is adopted.

Peaches.—Early varieties of Peaches grown on walls are approaching ripeness. It will be advisable to remove some of the leaves or tie back any shoots that overhang the fruit and intercept the sun's rays. When the fruits begin to ripen syringing of the trees should be discontinued. Earwigs often prove troublesome at this stage and steps must be taken to trap these pests. If dried Broad Bean stalks are placed in the branches of the tree the insects will hide in them and may be blown out every morning into a vessel containing an insecticide.

Plums on Walls.—The summer pruning of Plums and Gages trained on walls should be done forthwith. Shorten all side shoots to within five or six leaves of their base. Prune the upper parts of the tree first and the lower branches a few days later. In the case of young trees that have not filled the wall space the leaders should not be shortened except any that show exceptional vigour, and these may have their tips removed. As the work proceeds remove all fruits that have become stunted and deformed.

Strawberry Mildew.—Any beds that have been attacked by mildew during the fruiting season should be sprayed immediately with a reliable mildew wash, or lime and sulphur specific, as previously advised. Plants free from this disease will build up much better crowns for fruiting next season than those attacked by it.

General Remarks.—Continue to use the hoe freely among all fruit trees. Manure applied as a mulch should be slightly raised after heavy rains by the use of a fork. Protect choice fruits from wasps and birds as they approach ripeness.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Peaches.—As soon as early and mid-season trees are cleared of their fruits, prune, cleanse and rearrange the shoots. The trees should receive all the air possible, and the borders be watered freely every ten or fourteen days. All superfluous wood which has borne fruit and obstructs the light and free circulation of air should be cut away. Whilst giving more room to the shoots retained, this will enable the operator to cover the bare stems with shoots and foliage to protect them from direct sunshine. If the wood is strong and the foliage healthy, exercise great care in feeding the roots, for an excess of stimulants may tend to coarseness of growth; trees that have cropped heavily and show signs of weakness may be stimulated into plumping up their buds by a dressing of manure and occasional waterings with liquid manure. Keep the trees scrupulously clean by syringing them freely with clear water on fine evenings and, if necessary, use an insecticide.

Later Peach Houses.—Keep the atmosphere cool in houses where the fruits are ripe and see that the borders do not become excessively dry, or the fruits will not hang so long as is desirable. Maintain a somewhat drier atmosphere in houses where the fruits are ripening, and, should the weather be dull and sunless, the use of a little fire-heat will improve the flavour. Trees in later houses on which the fruits are swelling fast should receive liberal supplies of food and water, and be syringed twice daily with soft water. If the water contains lime, woolly-skinned Peaches are best syringed only once a day. An abundance of air should be given from the time the first trace of colour is seen in the fruits.

Latest Peach Houses.—Peaches ripen slowly under the shade of their own foliage, and now is the time to retard or advance the crop, as it is useless to attempt to keep back ripe or semi-ripe fruits. All borders in late houses, inside or out, should be mulched, if not already done, with fresh stable manure. By adding a little fresh material occasionally, the ammonia constantly given off will help to keep the foliage clean and healthy and free from red spider,

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Thunia.—An important factor in the successful cultivation of Thunias is the treatment they receive after the flowering period. Occasionally they are placed in a corner of the house, and receive little or no attention; such neglect is sure to have a detrimental effect on the growth next year. When the flowers are removed, the plants should occupy a position in a well-ventilated house where they will receive the full benefit of the sun's rays. A copious supply of water is necessary from now onwards until the foliage begins to fall, when the quantity may be reduced gradually, until moisture is altogether withheld when the stems are bare. Thunias require a long rest in a cool house where the temperature does not fall below 50°. Water is not needed during the resting stage, and the atmosphere should be on the dry side.

Dendrobium.—The members of the spring flowering section of this genus, of which *D. nobile* may be cited as an example, are growing freely, and should be given every encouragement to make strong pseudo-bulbs. Where the plants are growing in a house by themselves, or with such subjects as *Catasetum*, no difficulty will be experienced in producing the proper conditions. At this stage they require plenty of warmth and especially sun-heat; the atmosphere should be kept moist, and the plants sprayed overhead twice daily in hot, dry weather. Admit air during the middle of the day and on mild nights, when the top ventilators should be left open an inch or so to allow the superfluous atmospheric moisture to escape, otherwise it will condense on the foliage and perhaps cause the black spot disease to appear. A very thin shading will suffice to protect the plants from strong sunlight, and the blinds should only be lowered when there is fear of scorching the foliage. Other occupants of the *Dendrobium* house include *Cynoches*, *Mormodes*, *Catasetum*, and *Schomburgkia*. These plants need copious supplies of water at the roots, and may receive the same treatment as advised for *Dendrobium*. If red spider appears on the leaves of the *Catasetums*, they should be carefully sponged with a solution of insecticide. To secure the best results, the pseudo-bulbs need to be thoroughly ripened.

Colax jugosus.—When this plant begins to grow, it may be repotted in a mixture of *Osmunda* fibre and loam. Pans are the most suitable receptacles, and the plants may either be grown on the stage in the intermediate house or suspended from the roof rafters. Thrips are very partial to the young growths, and unless they are destroyed the foliage will be injured. A sure preventive is to dip the shoots in an insecticide; after doing this, place the plants on their sides until the liquid has drained away. The hybrid *Zygocolax Veitchii* will thrive in similar conditions.

PLANTS UNDER GLASS

By JOHN CORTIS, Foreman, Royal Botanic Gardens, Kew.

Hydrangea.—Young, rooted plants of *Hydrangea* should be shifted into 48-sized pots, and may be afterwards stood in cold frames, keeping the latter closed until they are established, when the light may be removed altogether. Cuttings may still be inserted according to requirements. Young plants should be shortened as they pass out of flower, and when starting into growth afresh should be repotted. Stand them in the open in a sunny position, where the wood will get well ripened by winter. Some of the newer varieties, such as *Mme. E. Mouilliere*, *Radiant*, *Satinette*, and *Gen. Vicomtesse de Vibraye* are much more dependable, as young plants, for flowering, than some of the older varieties.

Campanula Vidalii.—This distinct *Campanula* is in flower, and always attracts attention from its unique appearance. It is a native of the Azores and requires greenhouse treatment, or it may be grown in a cold frame in which fire-

heat is available during severe weather. Propagation may be effected by means of cuttings, but plants raised from seed, which ripens freely, make the best specimens. Seed may be sown now, or when it is ripe. The plant is two years in flowering and is best in its third year.

Chironia linoidea (syn. *ixifera*).—This plant is an old favourite in gardens and flowers at this season, when choice subjects are none too plentiful for the embellishment of the greenhouse and conservatory. At one time the species was extensively grown as a large specimen plant. It is easily propagated by means of cuttings inserted at this season. Young plants propagated last year should be potted on, to become well established before the winter; for in common with South African plants generally it is apt to suffer from lack of sunshine and light. The potting soil should consist of light loam, with the addition of a little peat, and enough sand to keep the mixture porous. Frequent stopping of the shoots is necessary to produce shapely, bushy specimens. With the exception of the Begonia mite Chironias are not troubled with insect enemies; the mite may be destroyed by the use of a sulphur vaporiser, as previously advised for other plants subject to the attacks of this pest. *Chironia floribunda* and *C. laxa* are also very pretty species and well worth growing.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Late Broccoli.—Complete the planting of late Broccoli, selecting an open situation. They should be planted in firm ground which is not of a rich nature, the object being to prevent quick, soft growth, conditions which make them liable to injury from frost. It is not unusual to plant on the site of the old Strawberry bed which, after being cleaned and hoed, provides conditions in which Broccoli grow and winter satisfactorily. Put the plants two feet apart each way.

Shallots and Garlic.—As soon as the top growth of these crops shows signs of ripening the bulbs should be lifted, otherwise they will form fresh roots and lose quality. Finish their ripening by placing them in a dry spot and protect them from rains by placing a spare light over them. As soon as they are thoroughly matured, clean and store them in a dry, airy shed or other suitable place.

Early Potatos.—The tubers may be lifted before the tops have died down, and, if the work is done carefully to prevent undue bruising of the skins, they will keep satisfactorily. It is not usual to spray early varieties of Potatos, as they generally escape attacks of late blight disease, but the recent heavy rains accompanied by occasional bursts of hot sunshine, have been favourable to the spread of this disease, and many crops are already badly affected. Where the haulms are diseased, the crops should be lifted forthwith, otherwise the spores will be washed into the soil and affect the tubers. The haulms should be cleared from the ground and burnt, otherwise they will become a source of future infection. Where seed-tubers are to be saved, select them whilst in an unripe state, and allow the skins to harden by exposure before storing them. Over-ripe seed fails to decay when planted, resulting in poor top-growth and an unsatisfactory crop. It is a mistake to save seed from a crop of this description, because even if saved in an unripe state, experience proves that not until their second or third generation do such seed-tubers again produce satisfactory crops.

Winter Greens and Savoys.—Where it has been imperative to wait until ground became vacant, it is not too late to plant Winter Greens, including Savoys. Where good sturdy plants are available, they will prove satisfactory, if planted at once.

Tomatos.—Restrict the growth to the main stem and the flower-trusses. Where the fruits have set, the plants will benefit by applications of manure water. As soon as the fourth or fifth truss of flowers develops remove the tops of the plants, as later trusses are not likely to mature.

ORCHID NOTES AND GLEANINGS.

SOBRALIA COLMANAE.

SOME good specimens of this handsome *Sobralia*, which was raised in Sir Jeremiah Colman's gardens at Gatton Park, where it flowered first in 1917, are again flowering there in great profusion, proving it to be the best yellow *Sobralia*. It was obtained by crossing *S. Veitchii* (macrantha × *xantholeuca*) with *S. xantholeuca* again. A form of bluish-white flowers has also appeared. *Sobralias*, with their tall, slender, leafy stems surmounted by large Cattleya-like flowers, are not now general favourites on account of the modern Orchid houses being generally too low to accommodate them. But too often it is overlooked that they are ideal plants for warm conservatories, their growths being ornamental and their flowers very showy.

tain as many live roots as possible, but all dead roots and the stemless rhizome should be cut away. The healthy portions may then be potted either singly or several placed together to form a compact specimen. *B.*

ODONTOGLOSSUM ELDORADO.

OUR illustration (Fig. 27) represents this fine new hybrid, raised between *O. eximium* and *O. Lakiniae*, and for which W. R. Fasey, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour), obtained an Award of Merit at the Royal Horticultural Society on July 13. It is a very showy hybrid, the heavy and effectively-arranged, dark violet-purple markings showing well on the clear white ground of the flower, the lip of which is very broad and well formed. *O. Eldorado* shows the influence of *O. Lakiniae*, a fine variety, of unrecorded parentage, but in which *O. Wilckeanum* is strongly suggested, although it is an advance in size and colour of the older variety.

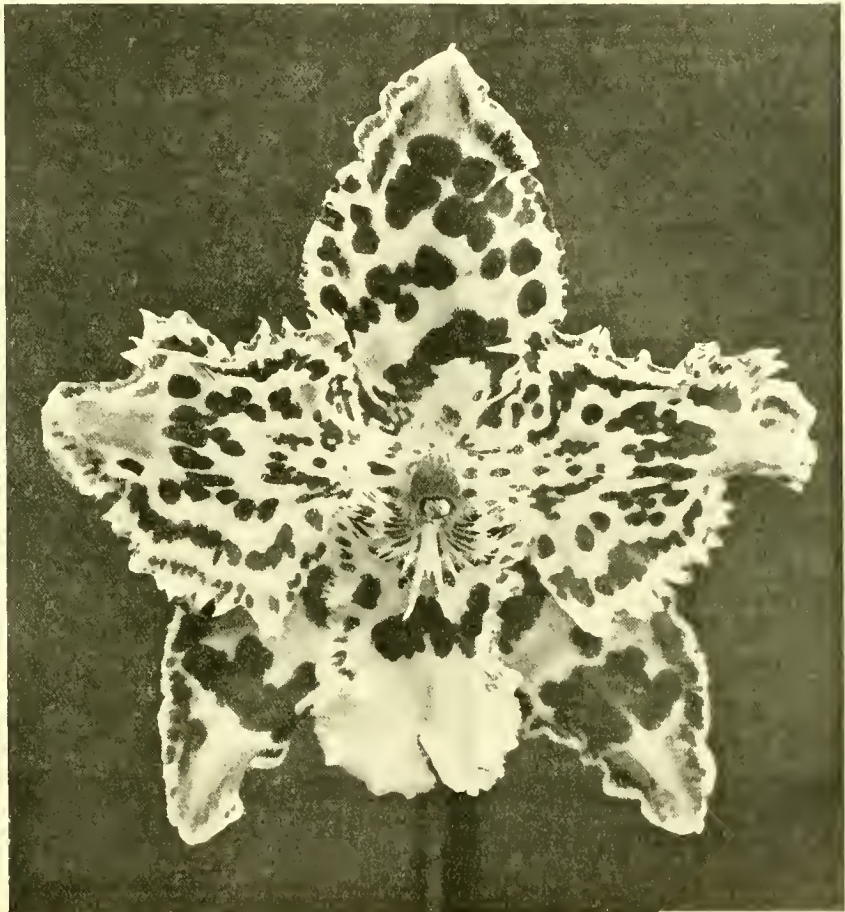


FIG. 27.—ODONTOGLOSSUM ELDORADO.

SOBRALIA.

THESE plants soon attain large dimensions, and it is necessary to divide them occasionally. This may be done when the flowering season is over, and new growths are developing at the base. A few of the old shoots should be cut out, thereby giving the young growths more room to develop. *Sobralias* produce a quantity of strong roots, and they enjoy a more retentive rooting medium than most Orchids. A compost consisting of good fibrous loam three parts and peat or partly decayed Oak leaves one part, with a sprinkling of crushed crocks will provide a suitable compost. Very little drainage material will suffice, but sufficient should be used to ensure a free passage for water. Large specimens that have become stemless in the centre, should be turned out of their pots and broken up into several pieces. In doing this care must be taken to re-

CIRRHOPETALUM MASTERSIANUM.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), whose extensive collection of Orchids is the oldest in the London area, does great service to science as well as horticulture by the successful care which he bestows on a good representative selection of pretty species, many of which, in gardens where they are less cared for, rapidly die out. With other rare species, Mr. Pitt showed at the last meeting of the R.H.S. a good specimen of *Cirrhopetalum Mastersianum*, imported in 1890, and named in honour of the late Dr. Maxwell T. Masters. The slender sprays of pretty, coppery-orange flowers were much admired. The plant was in perfect condition, and to keep a rather frail, evergreen tropical species in good health for so many years is a praiseworthy event, even although it is a common experience with Mr. Pitt, who is one of the most successful of cultivators.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA *

* No. 20.—GIDZ' LAW.

THE invariable drawback of granitic ranges is the unvarying sameness of their flora.

The collector's ecstasy when he returns from his first expedition with a dozen beautiful new species is only equalled by his subsequent fatigue and disillusionment when he returns from all his later ones with nothing more. But even the granitic ranges have their local rarities and their little pleasant surprises to lighten the monotony of labour. Rheum Alexandrae, for instance, has not yet repeated itself to me on its native hills, and there are other finds that await relation. All the same, the ascent out of the Sabiya Kaw valley, on to the connecting ridge that binds the subsidiary range of the Bärenjoch at right angles to the main frontier chain, offers little to the climber but labour and fatigue. The first part of the ascent is over beds of springy, dwarf Rhododendron, admirable to descend, but not the happiest of mediums for ascent. It is only when these are surmounted, and one's feet can go comfortably up over fine lawns and stones, that the fun of the climb begins.

Ere long the uppermost cauldron of the valley is left far below, and, as one mounts towards the wild rocks overhead, one comes into the territory of the turf-flora. The little golden *Potentilla* is in humped hassocks along the edge of every boulder, and in the open slopes themselves, associated often with a small *Polygonum*, which, though it might, perhaps, prove only a very refined high-alpine version of *P. viviparum*, so universal over the hillsides of the Middle Zone, yet appears to me quite sufficiently distinct, with a stature of only three or four inches, and neat, oval fluffs of soft-pink flower. But the *Potentilla*'s gold has an even richer foil, in the violet-purple stars of a *Gentian*, which seems, to my memory, to come very near to *G. pyrenaica*, if not indeed identical. This, like the *Potentilla*, and along with it, over all the close turf and boulder ledges, makes tight, hard masses as close as moss, of which the green cannot be seen, owing to the dense conglomeration of purple stars that sheets it over.

But in the gaunt wilderness of rocks at which we are now arrived, yet another pleasure awaits us. Throughout my gardening life I

have always longed particularly to find a *Primula* of the *Dryadifolia* Group (though I might say the same of the *Soldanelloids*, the *Amethystinas*, and the *Callianthas*). And now, behold, here a *Dryadifolia Primula* actually is nestling in large, lax cushions, in shady, cool nooks of the uppermost granitic cliffs and boulder-tumbles, occasionally descending along the little rills that trickle down from their faces, or out of their recesses. It is not, however, *P. dryadifolia*, itself; nor is it *P. phileresia*. And conjecture can go, as yet, no further, for no diagnosable trace of flower could I still find remaining; and, indeed, those large comfortable hassocks of dark-green foliage (enriched on the reverse with creamy powder) did not by any means seem invariably profuse in blossom; nor, even where they had bloomed did mere than a small proportion of capsules appear to be maturing soundly. But this is, so far, the most exclusively high-alpine of my *Primulas*, and now we are up in the dreary region of naked rock, and gigantic black spars and boulders, compiled in all the fierce and frantic chaos affected by granitic ranges alone, where not a thousand ages of wind and weather appear able to soften the gaunt harshness of their unlovely lines.



[Photograph by Reginald Farrer.]
FIG. 28.—THE DARK, BLUE-FLOWERED CYANANTHUS, ASSOCIATED WITH THE GOLDEN SAXIFRAGE.

Another moment, though, and we are on the crest of the connecting ridge, and looking straight down into the Alpine valley that it separates from our own. A much wilder valley, however, caught in a semi-circle of three great, barren, ruinous peaks of granite (on the flank of the nearest of which we are now verging) that descend, in sweeps of scree, and long smooth stretches of bare slab towards the depths so far beneath. And here, for once, the imprisoned waters of the surrounding heights had developed from a marsh into a lake—a real lake, small, indeed, but indisputably a lake, and not a pool or tarn or mere, lying very dark beneath its encircling erags, and so miraculously clear that, even to us on the Ridge, three thousand feet above, its bed of white granitic sand gleamed up ghostly through the crystal floor of the water. But I did not descend to it in any vain hope of novelties; instead, we pursued our way along the crest towards the nearest of the three craggy peaks that make up the "massif" of Gidz' Law.

The stern rocks, however, at this altitude, do not yield much; old friends were still here, but of new ones there were only a few orange *Hirculus Saxifrages*, and the snowy white stars of an *Edelweiss*, which really is both white and

noble, and high-alpine. It is, indeed, the best and most Alpine form of *Leontopodium alpinum* I have ever seen, as different from the dull plebeian one that covers the hot foothills, as from the green-leaved, wide-rayed star of the Tibetan hayfields, and the dull plebeian cushion of the highest barrens on Thundercrown. This development, perhaps, comes nearest of all to the European one, but the whole plant is much whiter, the flower brilliantly so, and the rays of the star much more sharply pointed. And it has the further attraction of being a rare plant and a genuinely high-alpine one. In these ranges I have only twice seen it; here, on the wild high tops of Gidz' Law, and on the cliffs at the head of the gully above the camp. In fact, it does what *L. alpinum* of the European ranges is popularly, and quite falsely, supposed to do—it occurs very seldom, and it occurs only in very high, difficult, and perilous places of the upper rocks.

My joy in this was now damped by mist and rain, but rekindled by coming again on another rare treasure, which I had hitherto seen in only one colony, so small that I was now doubly rejoiced to find it occurring in quite a wide stretch, just under the arête. This is a charming, dwarf, high-alpine *Aster*, the first I

have seen out here of its kind, which, so far from copying *A. alpinus*, like most others of its elevated tastes, has its little 3-inch stems so beset with oval-pointed ciliate leaves that its purple flowers suggest those of some miniature *A. Thomsonii*.

After this, I felt the day could indeed yield us no more. What new high-alpine flowers could be expected at the end of August, when all the Alpine heights are already passing into seed? I had forgotten one race of prime importance; and this, although I had often previously wondered if I should not meet with some of its members. And now, with extreme suddenness, there flared out at me intensely, from amid the long grass of a little gold in the topmost fell, a five-lobed blossom of so intense a sapphire-purple, that almost, for a moment, its colour, shape, size, and outline made me wildly think of the Grand Violet, or some new *Omphalogramma*. But it was indeed a *Cyananthus*, and a *Cyananthus* of rare richness and velvety depth of colour, trailing about among the grasses, with small, ferny leaves of emerald green (see Fig. 28). And, after this, what mattered clouds and rain and mist, thenceforth incessant? For the heights of Gidz' Law had certainly not grudged me of their best. Reginald Farrer.

* The previous articles by Mr. Farrer were published in our issue for June 21, June 28, July 13, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, April 24, May 29 and July 10.

NEW AND NOTEWORTHY PLANTS.

ROSA RUBUS, LEV. AND VAN.*

Rosa Rubus is a fine Chinese Rose of the *moschata* group. It has recently made its appearance in gardens and is at last showing something of its true character. It was originally described from dried specimens in 1908, under the name of *Rosa Rubus*, by Leveillé and Vaniot, and somewhat later, what is evidently the same Rose, was called *R. moschata* var. *hupehensis*, by Pampanini. It has been in cultivation for some time, and we believe was originally introduced by Mr. E. H. Wilson, who includes a fine photograph in his series of Chinese plants (n. 098), where it is seen at home among *Pinus Massoniana*, Lamb., the plant growing to fifteen feet high and being covered with masses of fragrant white flowers. According to Wilson, it is a common species everywhere in western Hupeh and eastern Szechuen, up to 1,300 metres altitude.

R. Rubus is also the *Rosa*, n. 291, about which

Chinese representative of our European *R. moschata*.

An idea of its appearance under natural conditions may be gained by an extract from Farrer's book. Speaking of a pleasant little place on the flank of the giant mountain range, Thunder-crown, which he denominates as Barley Bee, he remarks:—

"In June, Barley Bee has yet a further attraction, for all its hedges are filled with a gigantic rambler Rose, which casts abroad twelve-feet, slender sprays (beset with rare, but very vigorous and ferocious thorns) which in their second season are bowed into arches by the weight, all along their length, of huge, loose bunches of snow-white blossom, unfolding from buds of nankeen yellow, and carrying on their glory far into the early winter in showers of round berries, finer than the finest Mountain Ash, that ripen of a rich orange and develop to soft, crimson-scarlet with a delicate, faint bloom. But this is not its chief merit when it submerges Barley Bee in a surf of snow, for now the scent is so keen and entrancing that all the air quivers with the intoxicating deliciousness of it for half

of pleasing habit, useful in the pleasure grounds and park, because it is one of the last to flower, and, as the illustration depicts, is free and attractive in blossom.

During the second half of June and well into the month of July it is a beautiful summer-flowering tree. The flowers are followed by quantities of small, bright-red fruits, which clothe the trees well into the New Year.

AESCULUS CALIFORNICA.

FLOWERING in late June and during July, the Californian Buckeye, *Aesculus californica*, is a valuable, large bush, or small, spreading tree. It is said to vary in California from a shrub 12 to 15 feet in height to a tree 25 to 35 feet, occasionally a few feet more, in height.

Specimens in this country usually exceed in diameter the height of the trees. As a lawn specimen, the best examples are limited to a single stem. The five or seven-lobed leaves are small compared with other Chestnuts, and rich dark-green in colour. The flowers are white, tinted rose, and very freely produced on slender (cylindrical) panicles, 6 or 7 inches long.



FIG. 29.—FLOWERING BRANCH OF CRATAEGUS CORDATA.

Farrer wrote so enthusiastically in his *Leaves of the World*, ii., pp. 4, 5. Seeds have been distributed and plants flowered with Mrs. Woodward, Arley Castle, Bewdley, in June, 1919, and again during the present year. On both occasions, materials were sent to Kew for determination, and now it is also sent by Mr. E. A. Bowles, Myddelton House, Waltham Cross, who remarks that it has been a fair sight for over a fortnight, and has a pleasant Musk-Rose scent. One of the plants had crimson buds and faintly tinged pink flowers. Mrs. Woodward remarks that seeds of this (n. 291) were sown in October, 1914, and now the plant is showing something like its true character and producing myriads of its lovely, fragrant flowers. The receipt of ample materials now enables this fine Rose to be determined. It belongs to the section *Synstylae*, and may be regarded as the

a mile round the village in every direction, and the toils of the climb ended sweetly indeed, as I lay out upon the flat roof through the soft summer dusk and dark, lapped in waves of that warm fragrance. . . . At first, one crosses the narrow, level strip behind the villages, between hedgerows luxuriant with the Snowdrift Rose, who tries to tear your cheeks with the hooked thorns of her first season's shoots as you ride in reach of their slender, far-grappling tentacles." *R. A. Rolfe.*

TREES AND SHRUBS.

CRATAEGUS CORDATA.

WITH something like a thousand species of *Crataegus* (Thorns) in cultivation in this country, it is pleasing to record one so distinct and beautiful as the Washington Thorn, *Crataegus cordata* (see Fig. 29). This Thorn is a native of the Eastern United States, and was introduced in 1738. It forms a round-headed tree

Aesculus (Pavia) *californica* is said to have been first introduced by William Lobb about seventy years ago, the first specimen to flower in this country, according to the *Botanical Magazine*, tab. 5077, being at Messrs. Robert Veitch's Exeter nursery in 1858. *A. O.*

PERIPLOCA SEPIUM.

THIS handsome twining plant the Arnold Arboretum owes to the labours of Mr. Jack, in Korea. It grows on a trellis, and is flowering unusually well this year. It is a plant with slender stems, pointed, dark green, and very lustrous leaves about three and a half inches in length and not much more than half an inch in width, and small blossoms in few-flowered clusters. The flowers do not make much show when seen from a distance, but on close examination show that they are green on the outside, dark purple with a five-lobed crown at the base on the inside, and they are pleasantly fragrant. The plants in the Arnold Arboretum have not yet produced their slender, pod-like fruits, but they send up numerous root suckers.

* *Rosa Rubus*, Lev. and Van, in *Bull. Soc. Bot. Fr.*, L.V. (1908), p. 55; Willmott, *Genus Rosa*, ii., p. 507, tab.; Wilson in *Sarg. Pl. Wits.*, ii., p. 308; *R. moschata* var. *hupehensis*, Pampanini in *Nuov. Giorn. Bot. Ital.*, n.s. xvii., p. 295.

BRASSICA CROSSES.

BRASSICA chinensis var. Pe-tsai, the Chinese Cabbage, sent out some years ago by Messrs. Vilmorin Andrieux et Cie., of Paris, has some good qualities which the plant breeder cannot afford to overlook. The rapidity of growth, the abundance and softness of the leaves set in very firm heads like a large Cos Lettuce, and their good flavour are particularly noticeable qualities.

Some years ago I made the following crosses with all possible care:—

1. Brassica oleracea Cow's Fodder (white and violet var.) ♀ × B. chinensis var. Pe-tsai ♂.
2. B. chinensis Pe-tsai ♀ × B. oleracea Cow's Fodder (white and blue var.) ♂.
3. B. chinensis Pe-tsai ♀ × B. oleracea botrytis cauliflora (Cauliflower) ♂.
4. B. oleracea botrytis cauliflora (Cauliflower) ♀ × B. chinensis Pe-tsai ♂.
5. B. chinensis Pe-tsai ♀ × B. oleracea capitata (white headed Cabbage) ♂.
6. B. chinensis Pe-tsai ♀ × B. oleracea acephala viridis ♂.
7. B. chinensis Pe-tsai ♀ × B. rapa ♂.
8. B. rapa ♀ × B. chinensis Pe-tsai.

I fertilised ten flowers of each cross. No. 1 and No. 2 crosses, made with the design of obtaining some good, quick-growing varieties for cattle food, were without any practical result. No. 1 gave no perfect seeds. No. 2 produced four seeds that germinated regularly and gave four large, vigorous, stemless plants, with leaves intermediate in shape between the parents, but more resembling the mother. The colour of the whole plant was a greenish white, turning to the purest white in the centre. Though grown in a sheltered position, all died in winter.

No. 3 gave few more or less perfect seeds, three of which germinated, producing three plants like the mother, but without any sign of leaf-head or flower-head. Two of these plants died during the winter; the third, self fertilised, produced some apparently not perfect seeds, from which about fifty plants grew with great vigour. These plants of the F₂ generation were all stemless; in two-thirds of them the lamina of the leaves was entire, as in the mother; one-third had lobed and long-petioled leaves, like those of the Cauliflower. Not one of these plants produced fertile seeds.

The crosses No. 4, No. 5 and No. 6 did not bear fertile seeds.

The most important results were obtained from the crosses No. 7 and No. 8. The Chinese Cabbage has a great sexual affinity with the White Turnip. All the fertilised flowers bore perfect siliques, full of good seeds that germinated readily. All the plants of the F₁ generation were very vigorous, without any sign of bulb, both in the Nos. 7 and 8 crosses. However, those of the latter had their spindle-shaped roots a little more widened than those of the former. The leaves were very large, lobate as in Brassica Rapa, erect like those of the Chinese Cabbage, but not forming any true head. They had a strong nervure over the whole surface.

These plants, self fertilised, produced a profusion of seeds, their fertility being, perhaps, superior to that of the parents.

The recessive characters—presence of the bulb and entire lamina of the leaf—reappeared in the F₂ generation, with the Mendelian ratio.

Some hundreds of seedlings I raised gave me a multitude of very interesting forms. Some of these had bulbs of various shapes and sizes, sometimes perfectly round and regular as in B. Rapa, sometimes more or less strengthened as in the Horse radish. Of the bulbous-rooted plants some had entire leaves like the Chinese Cabbage, others had lobed foliage like that of B. Rapa. A tendency to form true heads was shown by some of the "bulbed" plants and also by some of those which did not bulb.

When cooked, the heads and bulbs were tender and of good flavour. The young, flowering shoots, profusely produced early in spring, may be prepared in the same way as Asparagus.

My experiments demonstrate, besides the great sexual affinity of Brassica chinensis with B. Rapa, that the pollen of the former has a very weak activity on the stigma of varieties of B. oleracea. Dr. A. Rayonieri, Castello, Italy.

INDOOR PLANTS.

HIPPEASTRUM (AMARYLLIS).

In the *Gardeners' Chronicle*, March 27, page 155, there is a note by W. T. giving a short history of *Hippeastrum pardinum*. He remarks: "This species has been but little employed by the hybridist, and it has played no important part with the present-day race of hybrids." It may be of interest to lovers of this beautiful Lily-like flower to give a short history as to the part H. pardinum and H. Leopoldii, both species introduced by the firm of Messrs. James Veitch and Sons, Chelsea, through their collector, Pearce, from the Andes of Peru in 1866, has played in the raising of novelties.

H. pardinum possesses a weak constitution; it throws up its flower scape from very small bulbs, therefore it was not long after its introduction before it flowered, and experiments were made in 1867 by John Seden, who at that time was Orchid hybridist and grower to the firm, in crossing H. pardinum with H. Ackermannii and others. The results obtained were not encouraging, only two seedlings out of the batch being considered of sufficient merit to be retained and named; these were H. Brilliant and H. Chelsonii, which received the R.H.S. First Class Certificate on March 15, 1871, as *Amaryllis Chelsonii*. H. pardinum was again tried, with no better results; the flowers of the progeny were weak, of poor form, and dull colours. We saw it was useless to continue crossing this species with other *Hippeastrums*, so gave up experimenting with it.

At the International Show at Chelsea in May, 1912, amongst a collection of *Amaryllis* exhibited by Messrs. J. Veitch and Sons, were two plants of H. pardinum; but they cut a sorry figure beside the other fine varieties exhibited. With the introduction and flowering of H. Leopoldii, H. pardinum was discarded altogether for hybridising purposes, as it lacked the fine form and substance of the other species. H. Leopoldii was most successfully used as a parent, and no other single species has exercised so much influence in the production of the best forms of *Hippeastrums*. The plant flowered in 1870 and was shown at one of the R.H.S. exhibitions at South Kensington. It was named in honour of the late Leopold I., King of the Belgians, who was at that time visiting this country. The flowers were large and widely expanded, the tube short, the segments broad and of good substance; the habit of the plant possessed points which were desirable to infuse into the race. The first results of the crosses with this species were very gratifying, and several of the original hybrids, when exhibited, received First Class Certificates from the R.H.S. Afterwards many fine varieties of the Leopoldii type were raised, and the highest state of perfection was attained, both in form and size, in the variety John Heal, which was certificated on March 8, 1881. These hybrids only produced two flowers on the spike. The next step was to increase the number of flowers to four or six, and at the same time to retain the symmetry and refinement characteristic of the Leopoldii type. Messrs. Veitch procured from Messrs. De Graaff Bros., nurserymen, Leiden, Holland, a seedling which was subsequently named Empress of India. This was a fine robust growing variety, with four to six flowers on a spike and a brilliant orange-scarlet colour. It was crossed with the best H. Leopoldii forms, and resulted not only in increasing the number of flowers to four to six, but gave colours of various shades and tints previously unknown. By intercrossing the best forms and colours thus obtained has resulted the race now so universally admired. The aim of the early hybridisers was the shortening and expansion of the flower tube, the widening of the floral segments, especially the lower one, and, as far as possible, diminishing the green central rays that are so objectionable from a florist's point of view. The result of their efforts may be seen in the many fine varieties contained in an up-to-date collection, such as the one at Westonbirt, Gloucestershire. John Heal, F.M.H.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Destructive Work of Millipedes.—As I am engaged upon a study of the economic status of millipedes, I shall be grateful for any particulars of the destructive work of these pests which has come to the notice of growers. An example of damage done is afforded by the appearance this year of a millipede new to science (and shortly to be described) in a plot of Selected White Czar Runner Beans at Wye, Kent. This new millipede attacks the Bean-seed and feeds upon it at the expense of the young plant. Remedial measures are under the writer's consideration. I should be glad to see specimens of any species met with by readers of *The Gardeners' Chronicle*. Millipedes are best sent alive in fresh grass (without soil) packed in an air-tight tin. Full particulars of capture (locality, crop, date, and name of collector) should be enclosed. Specimens which have been killed and preserved by dropping them into a small tube of ordinary methylated spirit may also be sent securely packed, but such material is not always as satisfactory for purposes of identification as living specimens. S. Graham Brade-Birks (Lecturer in Zoology and Geology at Wye College), 16, Bank Street, Darwen, Lancashire.

Dianthus Allwoodii.—This charming garden flower, half-Pink and half-Carnation, in its many varieties, varying from pure white to rose and crimson, is adding quite a new feature to many gardens. In the gardens at Belsize Court, Hampstead (gardener Mr. H. A. Page), it shows very effectively in mixed and herbaceous borders. In a rockery near to the gardener's cottage, and tended by Mrs. Page, it shows to great advantage, the pretty heads of white or brightly coloured flowers standing well above the other plants, the whole being well shown up by the mass of yellow-flowered *Lysimachia Nummularia* (Creeping Jenny) hanging over the front. The varieties planted have been allowed to remain, with only occasional trimming, and they are compact and more floriferous than when first planted. Mrs. Berghem's gardens afford one of the most successful examples of fruit-growing in the metropolitan area. Notwithstanding the fact that but little fire heat has been used, the houses contain heavy crops of Nectarines and Peaches. An equally good crop of Plums on trees in pots is seen in the orchard house, and the Vines are cropping well, although not up to the form displayed when heat was employed. In the open the Apple trees have almost failed to produce a crop for the first time for some years. J.O.B.

Leaf-Curl on Peach Trees.—In answer to *Pontica* and with reference to Peach Curl, my experience is that the disease has nothing to do with the cold weather; in fact, Peach Curl may occur under glass. I am sure a great deal of the trouble is due to bad cultivation of the roots and neglect of winter spraying. If growers were to winter spray with Bordeaux Mixture as soon as the trees are dormant, and also spray again early in the year before the buds open, I am sure they would not be troubled with Leaf-curl in Peaches. Chas. Richards.

—Has your correspondent *Pontica* tried the Wisley Burgundy Mixture for Leaf-curl in Peaches? Our Peach trees were very badly infected; in fact, I was afraid they would have to be destroyed. In February of last year I gave them two sprayings, one during the first week and the other at the end of the month. A great improvement was noticeable. I repeated the operation again this year, and do not think we had more than half a dozen affected leaves. Every part of the tree must be sprayed, and for this purpose I use an Abol syringe (98 per cent.), 93 oz.; sodium carbonate, 11 oz.; milk, 3 pint; water (soft), 3 gallons. Grind the two salts to a fine powder, and dissolve them separately in wooden vessels, in cold water. Then mix the two solutions, add the milk, and keep the whole well stirred whilst spraying. W. J. Skinner, Hardres Court Gardens, Canterbury.

HYBRID CALCEOLARIAS.

(Concluded from p. 47.)

C. BALLII is a small, pale-yellow flowered greenhouse plant, raised by Mr. C. F. Ball, Royal Botanic Gardens, Glasnevin, in 1913. It is a hybrid between *C. fuchsiaefolia* and *C. virgata*. See *Gard. Chron.*, February 14, 1914, p. 102. A plant identical with *C. Ballii* was raised at Merton in the same year and from the same cross.

C. Burbidgei, a well-known, yellow-flowered greenhouse plant, was raised in 1882 by the late Mr. F. W. Burbidge, Trinity College Botanic Garden, Dublin, by crossing *C. fuchsiaefolia* with *C. Pavonii*. There is a certain resemblance between this plant and *C. amplexicaulis* which led many people to suppose that possibly the latter species was one of its parents, a possibility never admitted by Mr. Burbidge. It is interesting to note that the parentage, as given by Mr. Burbidge, was confirmed by Mr. Allard at Merton in 1913, who made a cross between the two species mentioned. Several plants were obtained, all of which were identical with *C. Burbidgei*, whereas when *C. amplexicaulis* was crossed with *C. Pavonii* no seeds were formed. See *Gard. Chron.*, February 17, 1917, p. 76; February 9, 1917, p. 58; April 17, 1909, p. 242; and October 9, 1886, p. 464.

C. Jeffreyi was raised by crossing the herbaceous *Calceolaria* with *C. integrifolia*. See *Gard. Chron.*, June 16, 1906, p. 390.

C. kewensis, a beautiful, large-flowered plant was raised at Kew by crossing the herbaceous *Calceolaria* with *C. Jeffreyi*. See *Gard. Chron.*, June 16, 1906, p. 390.

C. Clibrani was raised about ten years ago. It is a tall, free-flowering and graceful plant, producing a profusion of small, golden-yellow flowers. See *Gard. Chron.*, June 24, 1912, p. 425.

C. Buttercup was raised as a result of crossing *C. Clibrani* with *C. Golden Glory*. It is very similar to *C. Allardii*, except that the flowers are of a deeper shade of yellow than produced by that plant. This plant was figured in *Gard. Chron.*, June 1, 1918, p. 229.

C. Golden Glory was raised by Messrs. R. Veitch and Son, Exeter, by crossing *C. plantaginea* with a yellow-flowered herbaceous *Calceolaria*. The flowers are golden-yellow and produced from June to July. It is hardy in the south of England. (See Fig. 30.) See also *Gard. Chron.*, September 23, 1911, p. 225.

C. Bronze Age, a free-flowering plant, was also raised by Messrs. R. Veitch and Son, Exeter, as a result of crossing *C. integrifolia* with *C. Golden Glory*. The flowers vary in colour from yellow to purple.

C. Veitchii is yet another of Messrs. R. Veitch and Son's hybrids. It was obtained by crossing *C. plantaginea* with a yellow-flowered herbaceous *Calceolaria* and then one of the white seedlings resulting from this cross was crossed with *C. alba*, which gave rise to this beautiful, tall-growing, creamy-white flowered greenhouse plant. See *Gard. Chron.*, June 1, 1912 (supplement), pp. xvi. and xxii.

C. Cotswold Hybrid is a tall-growing greenhouse plant. The flowers have a wide range of colours and are prettily marked. It is a cross between *C. Clibrani* and the herbaceous *Calceolaria*. See *Gard. Chron.*, Sept. 19, 1914, p. 206; May 13, 1916, p. 261; and June 24, 1916, p. 354.

C. Clarefield Gem is from a cross between *C. profusa* and the herbaceous *Calceolaria*. It is a tall-growing plant of free-branching habit, similar to *C. Clibrani*, but the flowers are larger and borne more closely to the stem. The pouch is circular, having a yellow ground, shaded with orange and spotted with crimson. It is noted in the *Journal of the Royal Hort. Soc.*, 1913-14, vol. 39, p. cxxiii.

Some of the species mentioned above are also known under other names:—*C. fuchsiaefolia* = *C. deflexa*; *C. virgata* = *C. Forgetii*; *C. integrifolia* = *C. rugosa*; *C. angustifolia* is a variety of *C. integrifolia*. A. Hosking, *The John Innes Horticultural Institution, Merton*.

SOCIETIES.

BIRMINGHAM HORTICULTURAL.

JULY 23 AND 24.—The floral fete held at Handsworth Park, Birmingham, on the above dates, was a huge affair, and the Birmingham Society is to be congratulated upon its enterprise and success. On this occasion the Society acted as host to the National Sweet Pea Society and to the National Pansy and Viola Society, each of whom had one large tent set apart for their exhibitors. Altogether the horticultural produce occupied seven tents. Further, the local "far and feather" society held an exhibition and filled two large tents with poultry and other small live-stock.

The Birmingham Society assists exhibitors in many ways. The tents are efficiently lighted throughout the night before the opening day and throughout that night, indeed, from 5 p.m. on the day before the opening of the show, exhibitors may obtain refreshments in the exhibition grounds. It assists visitors by providing them with a complete programme (for 3d.) of the competitive classes (with spaces in which

in the leading class for a group of plants arranged for effect on a space 20 ft. by 10 ft., Messrs. J. CYPHER AND SONS, Cheltenham, won the premier award of £25 with a very charming exhibit in which all the old artistry of disposition and association of colours was seen at its best. Fine Palms and graceful specimens of *Humera elegans* were prominent features, and there was a central arch, furnished with *Codiaeums* and *Begonias*. *Francoa ramosa*, *Lilium speciosum* and *L. auratum* provided the taller elegant flowering plants, whilst dwarf subjects were *Cattleyas*, *Cypripediums*, *Odontoglossums* and *Ixoras*. *Codiaeums*, *Dracaenas*, *Nandina domestica* and *Rex Begonias* were the leading dwarf foliage plants. Second prize was won by Sir G. H. KENDRICK (gr. Mr. J. V. Macdonald), Whatstone, Edgbaston, who had a very fine group wherein *Ixoras*, *Codiaeums*, *Fuchsia fulgens*, *Francoa ramosa*, and a few *Orchids* were pleasingly arranged. J. A. KENRICK, Esq. (gr. Mr. A. Cryer), Berrow Court, Edgbaston, came third with a somewhat heavier, but nevertheless a good, display.

For a group of foliage plants arranged on a space 20 ft. by 10 ft., Messrs. J. CYPHER AND



FIG. 30.—CALCEOLARIA GOLDEN GLORY FLOWERING IN THE OPEN.

the names of prize-winners may be inserted), of the various entertainments arranged, and of the items in the musical festival. The Society provides a police tent where lost children are cared for, an ambulance tent where prompt attention is given to cases of illness or accident, a post-box and a telegraph service, and a Press tent. Directly our representative arrived, Mr. Webster, the secretary, placed a Press steward at his disposal; the services of this cheerfully courteous gentleman were not utilised, however, but the fact that they were freely offered is worthy of note.

The Society arranges a wide range of attractions besides those which horticulture affords, and, perchance, some visitors do not care for the noise incidental to some of these "side shows." That the exhibition as a whole is greatly appreciated may be gathered from the record of £1,759 taken in gate money in 1919, of £516 paid to the Inland Revenue authorities as entertainment tax last year, and of £371 profit in 1919, which brought up the balance carried forward from 1919 to £809.

GROUPS AND PLANTS.

It was quite like old times to find a tent devoted chiefly to plants and groups of plants.

Sons were again the foremost exhibitors. This firm showed a fine group of elegant broad and narrow-leaved *Codiaeums*, Palms, *Rex Begonias*, *Alocasias*, *Nandina domestica*, *Dracaenas*, *Fittonias*, *Phyllanthus* and *Abutilons*. Sir G. H. KENRICK, second, his group being especially noticeable for the free use of *Selaginella caesia*, *Codiaeums*, and *Nandina domestica*. H. GREEN, Esq. (gr. M. W. March), Amberley House, Gravelly Hill, third.

Messrs. J. CYPHER AND SONS showed the best dozen specimen stove and greenhouse plants, their exhibit including good *Clerodendrons*, *Bougainvilleas*, *Ixoras*, *Kentias* and *Phoenix Reebelii*. J. A. KENRICK, Esq., was second. The latter was also second prize-winner in the class for six stove or greenhouse plants. J. A. KENRICK, Esq., had the best half dozen plants of *Coleus*, chiefly pyramidal specimens, well coloured. Mr. BOSTON, The Cross, Yardley, showed the best three exotic Ferns—varieties of *Adiantum cuneatum*.

J. A. KENRICK, Esq., won first prizes for (a) Ivy-leaved *Pelargoniums* and (b) six dwarf *Fuchsias*, but was beaten in another class for *Fuchsias* by Mr. H. J. ODELL. The last-named exhibitor was awarded first prize for

tuberous-rooted Begonias, but the class was not a success.

ROSES.

Roses provided a distinct feature, and were well and largely shown.

Messrs. GUNN AND SONS, Olton, had a wonderful exhibit of Roses in the class for a group arranged for effect. It was one of the finest exhibits we have ever seen. There were seven 6 ft. columns of ramblers, chiefly of the Dorothy Perkins class; beneath these were big vases and bouquets of Mme. E. Herriott, Lyon, George Dickson, Mrs. Mackellar, Florence Forrester, Mrs. Wemyss Quin, Margaret Dickson Hamill, and Coronation. Mr. ELISHA HICKS gained second place, and Mr. JOHN MATTOCK third.

For four dozen Roses, distinct varieties, Mr. ELISHA HICKS secured first position with medium-sized but clean and bright flowers, his best blooms being Modesty, C. O. Fitzgerald, H. W. Barton, and Florence Forrester; Mr. J. MATTOCK, second. First prize for twenty-four Roses distinct was won by Mr. ELISHA J. HICKS with a capital set, Mr. J. MATTOCK coming a close second. For a dozen blooms the position of these competitors was reversed, and in the class for a dozen Tea Roses Mr. MATTOCK beat Mr. HICKS; the former had fine flowers of Mrs. Foley Hobbs and Madame Jules Gravereaux.

Mr. J. MATTOCK showed the best dozen bunches of Garden Roses and set up a fine exhibit; Mr. E. HICKS, second.

In the local Rose classes Mr. CHAS. B. WORSEY, Edgbaston; Mr. G. SPEIGHT, Market Harborough; and Mr. H. E. FENTON, Walsall, were leading prize-winners.

CARNATIONS.

Carnations are always shown well in the Midlands, and on this occasion the growers provided a keen and interesting competition. As a display, however, the Carnations were not wholly a success, as the exhibits were crowded together.

Prof. BURSTALL, Selby Hill, led for a dozen border Carnations with a handsome set of varieties, his best being H. Brett, Gordon Douglas, Melba, and Sam Weller; Mr. F. BAYLISS, Charlemont Road, Walsall, second.—Mr. H. WOOLMAN, Sandy Hill, Shirley, led for a dozen Self Carnations, and showed fine flowers of Jean Douglas, Sunbeam, Agnes Sorrell, and Mrs. R. P. Smith; Mr. R. G. RUDD, King's Heath, second. Prof. BURSTALL was also chief prize-winner in another class for a dozen border Carnations.

Mr. C. H. HERBERT was first prize-winner for a dozen Bizarres and Flakes, and also for twelve white ground Picotees. Mr. H. WOOLMAN showed the best dozen yellow ground Picotees, and also the best dozen fancy Carnations other than yellow or buff grounds, while Mr. R. E. RUDD was first prize-man in the class for a dozen yellow ground fancies.

SWEET PEAS AND BORDER FLOWERS.

The Birmingham Society's Silver Challenge Cup, offered for the best display of Sweet Peas arranged on a space 20 ft. by 4 ft., was fought for by two competitors. The competition aroused considerable interest, as Messrs. E. W. KING and Co., Coggeshall, had won the cup twice; therefore, if they could score another win, the cup would be theirs. Messrs. E. W. KING AND Co. staged a very fine exhibit of large flowers arranged beautifully in vases of varying height, baskets, stands, and hanging bowls. Anglian White, Anglian Cream, Doris, Mrs. Tom Jones, Hawlmark Pink, and Daisy Bud were leading varieties in this exhibit, to which the cup was awarded. Messrs. HERN BROS., who were awarded the second prize, presented a somewhat formal group, but their arrangement of blooms in glass holders in low bowls was quite good. Leading varieties were Birdbrook, Edith Taylor, Mrs. A. Hitchcock, President, Mrs. T. Jones, Edna May, and King Manoel.

First prize for a display of border flowers arranged on a space 25 ft. by 10 ft. was won by Mr. MAURICE PRICHARD, Christchurch, who had a splendid exhibit of Kniphofias, Camoanillas, Ploxes, Delphiniums, Crinum Powellii, Agapanthus Mooreanus, A. umbellatus albus, Hyacinthus candicans, Spiraeas, Gladioli, Thalic-

trum dipterocephalum, and Stenanthium robustum. The whole of the flowers were displayed on the ground level, as in a wide border, and therefore every kind and variety could be seen below the level of the eye. The RHYDD NURSERIES, Hanley Castle, second.

J. A. KENRICK, Esq. (gr. Mr. Crier), Barrow Court, led for a dozen bunches of hardy flowers. Mr. J. ODELL (gr. Mr. A. Ford), Seaforth House, Handsworth, had the best six bunches of border flowers. Mr. MAURICE PRICHARD secured the premier award for twenty-four bunches of hardy flowers in not fewer than eighteen varieties, with a bold display of useful border subjects.

There was a keen competition in the open class for floral dinner-table decoration. Mr. A. J. BLAIR, Congleton, won first prize with a pleasing arrangement of Irish Elegance Roses, whilst Mr. W. GRESSON, Stoke House, Severn Stoke, won the second prize with a light design composed of Francoa sinuosa, Coreopsis, and Gloriosa superba. In another class Mrs. H. ANDREWS led with Carnations; Mr. CALSCOTT, second.

VEGETABLES AND FRUITS.

In the open class for a collection of vegetables the premier award was won by Major HARCOURT WEBB (gr. Mr. W. Garges), Spring Grove, Bewdley, with grand examples of Early Mammoth Cauliflowers, Mammoth White Onions, Conqueror Tomatoes, King George Peas, Webb's Exhibition Runner Beans, Prize winner Carrots, Colonist Potatoes, Green Striped Marrows, and Pink Perfection Celery. W. J. GRESSON, Esq. (gr. Mr. J. Parry), Stoke House, Severn Stoke, second; and H. W. SMITH, Esq. (gr. Mr. H. Davis), Hawthorns, Wilton Street, Stourbridge, third.

For six kinds of vegetables, Mr. W. PERKS, Lye, near Stourbridge, was first, and for nine kinds Mr. W. E. BARBER, Bourneville, took the lead.

Messrs. Sutton and Sons' first prize for six kinds of vegetables was won by W. J. GRESSON, Esq., H. W. SMITH coming second. Mr. R. H. BRAZIER, Sparkhill, led in the class provided by Messrs. Toogood and Sons; W. J. GRESSON led in Messrs. Webb and Sons' class; and Mr. W. PERKS, Lye, in the class provided by Messrs. Yates and Sons.

Excellent produce was displayed in the single dish classes, especially in those for Shallots, Cabbages, Onions, Lettuce, and Potatoes.

Fruit was not extensively shown, but we noted some good dishes of Red Currants, Gooseberries, and Loganberries.

NON COMPETITIVE EXHIBITS.

Trade and other non-competitive displays were numerous and of fine quality. The chief of these and awards gained by them were as follows:—

Gold Medal.—To Messrs. ALEX. DICKSON AND SONS, for a splendid exhibit of Roses and Sweet Peas; Messrs. E. WEBB AND SONS, for Vegetables and Sweet Peas; Mr. H. N. ELLISON, for Ferns and foliage plants; Messrs. SUTTON AND SONS, for Sweet Peas, Poppies, and other hardy annuals; Mr. ELISHA HICKS, for Roses; and Mr. W. WELLS, jun., for hardy flowers.

Silver-gilt Medal.—To Messrs. S. GROVE AND SONS, for hybrid Campanulas; Messrs. C. H. TAUFEVIN, for Carnations; Mr. A. S. DUNTON, for Roses; Messrs. W. H. SIMPSON AND SONS, for Antirrhinums and annuals; Messrs. STUART LOW AND Co., for Orchids and Carnations; and Messrs. BAKERS, for Poppies and Spiraeas.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE Monthly Meeting of this Society was held in the R.H.S. Hall on Monday, July 12, Mr. CHAS. H. CURTIS in the chair. Two new members were elected. One member was allowed to withdraw interest amounting to £3 13s. 6d. The sick pay for the month on the private side amounted to £41 15s. 6d., on the State Section to £17 19s. 2d., and Maternity benefits to £9.

NATIONAL SWEET PEA.

JULY 23 AND 24.—Before the war the National Sweet Pea Society was wont to hold a show in the provinces on occasion, and we remember fine displays at Carlisle, Ulverston, Luton and Dublin. This year the Society decided to hold one show only, and to give up the London show and go to the provinces. The honour fell to Birmingham and on the above dates the show was held in Handsworth Park, in conjunction with the Birmingham Horticultural Society's summer exhibition.

The Sweet Pea show was a very fine one, and although competition was not keen in all the classes, it was quite good, and these exhibits, together with the trade displays, combined to make up a beautiful exhibition, which filled one large tent. Because of recent unkind weather a poor show was expected, but the fears of the pessimists were unfounded, as quantities of fresh, large and clean flowers were staged. The trade displays were especially good.

Mr. W. HOLLOWAY, Port Hill, Shrewsbury, won the Henry Eckford Memorial Cup with a dozen bunches of splendid flowers, his varieties being John Porter, Prince George, Hawlmark Pink, R. F. Felton, Tangerine, Daisybud, King Mauve, Hercules, Mrs. Tom Jones, Elegance, Edith Cavell, and Fiery Cross. Sir G. TREVELYAN (gr. Mr. G. Keith), Morpeth, 2nd. Sir RANDOLF BAKER (gr. Mr. A. Usher), Ranston, Blandford, won the Sutton Cup offered for the best eighteen bunches, and he had very fine examples of Elegance, Barbara, Alex Malcolm, and La France; Sir G. TREVELYAN 2nd.

In the John K. King Challenge Cup class for twelve bunches, distinct varieties, M. PHILLIPS (gr. Mr. Golia), Astley, Salop, led. Sir R. BAKER won the first prize for six bunches of Sweet Peas (Messrs. Dobbie and Co.'s prize), and Mr. J. HAYCOCK, Gyfelia, led for nine bunches. Sir R. BAKER was also successful for three bunches, and he secured the President's prize for a dozen bunches, distinct, of varieties put into commerce during or since the autumn of 1916. Messrs. INELAND AND HITCHCOCK had the best three bunches of seedling varieties not yet in commerce, showing Mascotts Helio, Mascotts Scarlet and Shamrock, the first named a pretty, pale bicolor blue. The competition for the E. W. King Challenge Cup was very keen, and Mr. R. LANDFORD, Mildenhall, won the cup with a capital lot of a dozen bunches. Sir R. BAKER 2nd.

On this occasion the Burpee Cup for a table of varied Sweet Peas was won by Messrs. E. W. KING AND Co., who had a pleasing exhibit in which Mrs. A. Hitchcock, Marks Tey, Royal Salute, Giant Attraction, Doris, Mrs. T. Jones and Daisybud were the most prominent varieties. W. H. THICKET, Esq. (gr. Mr. J. Irvine), Grimsby, 2nd.

In the distinct classes the competition was not particularly good. Mr. D. SMITH, Viola Cottage, Cumnock, led in the Scottish class for six varieties. Mr. W. H. LEE, Powercourt Gardens, showed a magnificent nine bunches in the Irish class, flowers and stems being highly developed and the blossoms very clean. F. W. FRANKS, Esq. (gr. Mr. Humphreys), Tonbridge, won the piece of plate offered as first prize in the Southern Counties class for nine bunches. In the Birmingham class for six bunches Mr. T. HORTILL, Dudley, was the chief prize-winner. In the smaller classes Mr. J. W. WELLCOMBE, Gerrard's Cross, won the Bide Challenge Plate for a dozen bunches, and Mr. H. LEGGETT won the Perkin Challenge Plate for nine bunches; Mr. J. WILKINSON, Ruddington, 2nd.

Mr. TOM JONES, Ruabon, won the new Hawlmark Challenge Cup offered for a dozen bunches of distinct varieties, and, as usual, he showed splendid flowers. His leading sorts were Barbara, Elegance, Hawlmark Pink, Daisybud, R. F. Felton, Warrior and May Unwin; Mr. E. WILLIS, Swindon, 2nd. The last named competitor led for three bunches in the amateurs' division.

The "Beesio" class for twelve bunches, of twelve sprays each, brought out ten competitors, and Mr. TOM JONES was the successful competitor and showed superbly; Mr. J. HAYCOCK, Gyfelia, 2nd, Mr. ROBT. MADELEY, Market Drayton, won the Small Growers' Challenge Cup, and Mr.

J. RANDALL, Leamington Spa, obtained the Voss Challenge Cup with a magnificent six bunches.

Mr. J. RANDALL showed the best bunch of Sweet Peas in the competitive classes; the variety was Elegance, a pale pink variety raised by Messrs. Alex. Dickson and Sons. This bunch was as near to perfection as it seems possible to attain.

Mrs. RALPH and Miss RALPH, Kempton, shared the honour for table decorations, the former winning first prize; neither exhibit was of special merit.

TRADE EXHIBITS.

Mr. ROBERT BOLTON's artistic display included lovely flowers of Tangerine, his new variety named Picture (see Fig. 26), Valentine, Glory, Gold Medal and Felton's Cream. (Large gold medal.) Messrs. DOBBIE and Co. put up a bold exhibit, wherein the leading sorts were Mrs. Tom Jones, Constance Hinton, Majestic Cream, Melba, Mrs. A. Hitchcock and Royal Scots. (Gold medal.)

Messrs. SUTTON AND SONS had a very bright exhibit, and made a feature of Tangerine, Barbara, Fiery Cross and Liberty. (Gold Medal.) Mr. W. J. UNWIN's group consisted largely of his new Unwin's Pink, a variety delightful in colour, size and form. (Large gold medal.) Messrs. ALEX. DICKSON AND SONS staged particularly fresh flowers, and showed fine stands of Hawmark Pink, Annie Ireland, Royal Purple, and Thos. Stevenson. (Gold medal.)

Messrs. G. STARK AND SON presented a lightly arranged group containing many varieties, notably Pathfinder, Butterfly, Alex. Malcolm and May Day. (Silver medal.) Messrs. S. BIDE AND SON showed Mrs. E. Champion, Mavis, Climax, Mrs. J. Balmer, and other good sorts. (Silver medal.)

Messrs. LOWE AND SHAWYER, Uxbridge, who rarely exhibit, submitted large bunches of fine flowers of Valentine, R. F. Felton, Thos. Stevenson, Hercules, Liberty, Alex. Malcolm, Royal Purple, Daisybud, Hawmark Pink, Brilliant, and Mascotts White.

NATIONAL VIOLA AND PICOTEE.

JULY 23 and 24.—This Society flourishes in the Midlands, and there was excellent competition in the 29 classes provided at the exhibition held on the above dates in conjunction with the Birmingham Horticultural Society's Floral Fête. The quality of the blooms was very high, and we have rarely seen finer flowers than those staged by the leading prize winners, particularly in the Viola classes.

Mr. W. TORBY-DESMOND, Moseley, won the National Challenge Vase for twelve "vases" of Violas, distinct—the vases in this case were semi-circular tin bowls. However, the exhibit was a grand one, the bloom of immense size and clean. The varieties were Bessie Johnston, Milton Jumbo, Lily Stork, Annie D. Hamilton, Mrs. W. R. Milligan, Mrs. J. Young, Moseley Wonder, Sir E. Grey, Drummer Wilson, Master Stevenson, Mother Bostock, and Mrs. J. McEwan. The second prize fell to Mr. J. BOSTOCK, Moseley, who also had the best bloom in the Show—Mrs. J. McEwan. There were four competitors.

Mr. O. KINSMAN, King's Heath, had the best new rayless Viola in Mr. O. King, a big and rather coarse, white-centred mauve variety. Mr. BOSTOCK's Ross Wallace was the best self Viola, a rich golden yellow.

Messrs. EVANS AND COOK, Handsworth, won 1st prize for twelve vases of Violas, distinct, six blooms of each. Mr. O. KINSMAN coming 2nd. Messrs. EVANS AND COOK were also 1st for six vases, with Mr. W. J. WARD, Coal Pool, Walsall, 2nd. For three vases of Violas Messrs. EVANS AND COOK were again first prize winners. Mr. NEWMAN, King's Heath, led for three vases.

Blooms on boards, each with a paper collar, were extensively shown. In the class for 48 blooms of Violas, on boards, Mr. H. WOOLMAN was a good first with clean, shapely blooms of large size; Mr. G. W. HARRISON, Walhotle, Newburn-on-Tyne, 2nd, with large, somewhat floppy blooms.

Mr. J. SLATER, Bromley Cross, Bolton, led for a dozen self Violas on boards, and Messrs. EVANS AND COOK led for six blooms. The last named exhibitor led for a dozen Violas in a very keen competition. Mr. J. HENDEN, 2nd. Mr. H. WOOLMAN won in another class for twelve blooms, on boards, and was also first prize winner for two dozen blooms, followed by Mr. W. TORBY-DESMOND. There were seven competitors in this class.

Mr. H. J. TANNER, Sparkhill, had the best display of Violas, and set up his flowers with sprigs of Asparagus foliage; Messrs. ARTHUR BROWN, LTD., 2nd.

In the local class for a dozen vases of Violas the chief prize winner was Mr. C. MANTLE, May Lane, King's Heath.

In the Pansy Section Mr. W. PEMBERTON, Bloxwich, led for twenty-four blooms with almost perfect flowers; Mr. J. W. HARRISON, 2nd. Mr. J. HENDEN led for a dozen blooms, with clean and perfectly marked specimens. Mr. J. SLATER had the best dozen fancy Pansies.

Mr. H. WOOLMAN set up an attractive trade display of Violas, and Mr. T. J. BELL also showed a group of Violas and Pansies.

ROYAL HORTICULTURAL.

JULY 27.—Although the holiday season had well begun there was a quite good display at Westminster on the above date and a good attendance. The chief features were Gladioli, hardy flowers, Carnations and vegetables.

Floral Committee.

Present—Messrs. George Paul (in the chair), John Green, G. Harrow, S. Morris, G. Reuthe, John Heal, Andrew Ireland, W. Howe, J. F. McLeod, J. Dickson, Chas. Dixon, E. H. Jenkins, H. J. Jones, Chas. E. Shea, Chas. E. Pearson, W. P. Thomson, W. J. Bean, W. B. Cranfield, and R. C. Notcutt.

FIRST CLASS CERTIFICATE.

Lilium Brownii var. *kansuense*.—As shown, this is a very handsome Lily, the spike carrying eighteen flowers and buds. The flowers are large, whitish, heavily flushed with yellow over the centre, and reddish on the outside of the segments. Mr. E. H. Wilson, who was present, considers this to be only a form of *L. chloroaster*. Shown by Mr. Clarence Elliott, Stevenage.

AWARDS OF MERIT.

Lilium pseudo-tigrinum.—A strong-growing *Lilium*, growing apparently 4 ft. to 5 ft. high. Some of the stems carried 18 or 19 flowers. The latter are rich orange-coloured, speckled with purple over the centre and with the segments that recurve moderately. The foliage is slender and linear. It would be interesting to know how this differs from the *Lilium* variously known as *L. sutchuense*, *L. Davidii*, and *L. Thayerae*. Shown by Messrs. Bees, Ltd., Chester.

Campanula Woodstock.—A charming little hardy plant, eminently suited for the rock garden. It is extremely free-flowering, and bears upright blooms of a soft blue shade, some of the stems carrying no fewer than nine bells. This plant was obtained by crossing *C. Profusion* No. 2 with *C. cretica*, and it most resembles the latter parent. *C. Profusion* No. 2 resulted from crossing *C. isophylla* and *C. pyramidalis*. Show by Mr. E. H. Jenkins.

Lavatera Olbia rosea.—A bright rosy form of an old and well-known plant. Shown by Messrs. Ladhams, Ltd.

Phlox Alpha.—This variety has rounded, medium-sized flowers of a bright mauve or rosy lilac colour. It belongs to the suffruticosa section, and has stiffish, fibrous leaves. Shown by Messrs. Bakers, Ltd.

Sweet Pea Mascotts Helio.—A lovely Sweet Pea bearing four flowers on almost every spike. The form is good, and the waviness not excessive. The colour is helio-blue, the margins of the standard being paler and with a rose tinting. A most attractive variety, and one greatly admired by ladies. Shown by Messrs. Ireland and Hitchcock, Marks Tey.

Thalictrum dipterocarpum album.—A white-

flowered form of this elegant species. Shown by S. Morris, Esq., Earham Hall, Norwich.

Gladiolus Atalanta.—A very neat *Primulinus* hybrid with flowers rather more open and expanded than in most of these varieties. The colour is a light shade of apricot. Shown by Messrs. E. H. Krelage and Son, Haarlem.

Gladiolus Hermione.—Another elegant *Primulinus* hybrid, with comparatively small, slightly hooded flowers. The colour is bright and clear salmon, with reddish marks on the two inner segments. Shown by Messrs. E. H. Krelage and Son.

Gladiolus Painted Lady.—A handsome, large-flowered variety, with ample white flowers and a bright red-brown blotch on each of the two smaller inner segments. Shown by Messrs. Kelway and Son, Langport.

GROUPS.

Mr. W. WELLS, jun., exhibited Delphiniums, including *D. Moerheimii*, with other hardy flowers (Silver Flora Medal). Mr. H. J. JONES brought forward a collection of Phloxes on the ground level, where the numerous varieties could be seen to advantage. The collection numbered about sixty of the best varieties (Silver Flora Medal). Coloured Spiraeas, Gladioli, *Leycesteria formosa*, and a fine form of the double-flowered Bramble were among the subjects grouped by Messrs. B. LADHAMS (Silver Grenfell Medal). Mr. R. PRICHARD contributed a few Alpines (Bronze Banksian Medal).

Messrs. JAS. VERT AND SONS exhibited grand spikes of double Hollyhocks in about a dozen and a half splendid varieties of which Salmon Queen, Delicata, Walden Primrose, and Black Knight were particularly distinct and striking; the firm also showed twelve dozen specimen blooms on boards (Silver Grenfell Medal). In Mr. MAURICE PRICHARD's group of hardy flowers *Crinum Powellii*, Phloxes, *Kniphofia Rufa* and the newer *K. Royal Standard* were prominent subjects (Silver Grenfell Medal). Messrs. J. CHEAL AND SONS contributed a selection of hardy flowers (Bronze Flora Medal).

Messrs. BEES, LTD., were represented by a charmingly elegant strain of Iceland Poppies, *Roscoea cauthoides* and numerous spikes of *Lilium pseudo-tigrinum*, a very elegant, strong-growing, orange, purple spotted form (Silver Banksian Medal). Other exhibitors of hardy flowers were Messrs. MAXWELL AND BEALE (Bronze Banksian Medal); the Misses HOPKINS; Mr. G. W. MILLER (Bronze Flora Medal); Messrs. RICH AND CO. (Silver Flora Medal); and Mr. G. REUTHE (Bronze Flora Medal).

An elegant group of perpetual Carnations and a bold mass of flowers of varieties of *Dianthus Allwoodii* were exhibited by Messrs. ALLWOOD BROTHERS (Silver Flora Medal). Messrs. STUART LOW AND CO. also contributed a group of Carnations (Silver Banksian Medal).

Mr. WALTER EASLE showed a H.T. Rose named Lulu. This is lovely in the bud stage, the colour then being a pretty shade of salmon, tinted with apricot. The buds are pointed and of unusual length. As usual, the Rev. J. H. PEMBERTON'S ROSES were very attractive, and the group consisted chiefly of sorts of his own raising. His new variety named The Adjutant, bright rose-red, free flowering, sweetly scented and with handsome dark foliage, promises to be a capital bedding variety (Silver Flora Medal).

An interesting collection of stove plants was arranged by Mr. L. R. Russell, which included *Gloriosa Rothschildiana*, *Hedychium Gardnerianum*, and *Nidularium Meyendorffii* in a setting of foliage subjects (Silver-gilt Grenfell Medal). *Pelargonium crispum variegatum*, as neat standards and small plants in little pots, was well shown by the Hon. Vicary Gibbs (gr., Mr. E. Beckett), Aldenham.

Messrs. K. VELTHUIS, Hillegom, Holland, filled the annexe at the clock end of the hall with Gladioli, and staged their flowers in elegant fashion, in vases, bowls and baskets. In some cases suitable flowers and foliage were associated with the Gladiolus spikes. For instance, the mauve *Hubertus* was shown with *Thalictrum dipterocarpum*, and King of the Reds with purple and pink foliage. *Primulinus* varieties were

shown as freely as the large-flowered sorts. Rubini, Prince of Wales, Majara and Panama were some of the best large-flowering sorts (Silver-gilt Flora Medal). Maiden's Blush and Rene Victoria, the latter bright salmon, were two fine varieties of *Primulinus Gladioli*, shown by G. CAVE, Esq. (gr. Mr. J. Lawrence), Wrabness, Essex (Bronze Banksian Medal).

Messrs. J. KELWAY AND SONS filled the side of one table with *Gladioli*, and in most cases staged from four to six spikes of a variety in each vase. A few outstanding sorts were Golden Dawn, Minny, Lord Reah, and Happy Match (Silver Grenfell Medal). Major CHURCHER, Alverstoke, brought up a collection of *Gladioli*, chiefly American-raised sorts (Silver Grenfell Medal).

Messrs. BARR AND SONS exhibited a bright collection of *Gladioli*, mostly *primulinus* hybrids, and they made a special feature of the varieties Maiden's Blush, Golden Drop, Prince of Orange, Sea Rose and Lord Nelson. Messrs. E. H. KRELAGE AND SON, Haarlem, also showed *Gladioli* of the *primulinus* section, setting a few varieties in large bunches.

Orchid Committee.

Present—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, J. Wilson Potter, W. H. White, W. J. Kaye, Chas. H. Curtis, C. J. Lucas, J. E. Shill, W. H. Hatcher, A. McBean, Fred K. Sander, E. R. Ashton, Pantia Ralli, R. A. Rolfe, and R. Brooman-White.

The show of Orchids was confined to those for the Committee, and no groups were staged.

AWARDS.

AWARD OF MERIT.

Sophro-Laelio-Cattleya (Pandora × Marathon) from Messrs. CHARLESWORTH AND Co., Haywards Heath. A very brightly coloured hybrid of good shape. The sepals and petals are deep mauve, with a yellow shade and small white bases. The lip is ruby crimson, with gold lines from the base.

OTHER EXHIBITS.

Baron BRUNO SCHRÖDER, Heath Lodge, Englefield Green, showed *Cattleya Eleanor*, the Dell variety, a handsome pure white flower with large Tyrian-purple lip.

W. R. FASEY, Esq., The Oaks, Holly Bush Hill, Snaresbrook (gr., Mr. E. J. Seymour), sent *Odontoglossum St. George*, Fasey's variety, a charming flower; and the richly coloured *O. Woodroffiae*.

Dr. MIGUEL LACROZE, Bryndir, Roehampton (gr., Mr. Taylor) sent *Odontodia Brewii*, var. *Negra*, with nearly black sepals and petals and large lilac lip marked with purple.

Messrs. SANDER, St. Albans, showed two pretty novelties in *Laelio-Cattleya* *Glory* (*C. fulvescens* × *L.-C. Thylene*) and *L.-C. Enchantress* (*C. Rex* × *L.-C. hutchleyensis*) both with yellow sepals and petals and purple lip.

Messrs. CHARLESWORTH AND Co. showed the new *Odontodia illustris* (*Oda. Charlesworthii* × *Odm. illustrissimum*) with a fine spike of eighteen very dark flowers.

Messrs. J. AND A. McBEAN, Cooksbridge, sent their *Odontoglossum Fletcherianum* (*Edwardii* × *cirrhosum*), an elegant hybrid with slender branching spikes of small blackish claret flowers with yellow crest.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), A. Bullock, Geo. F. Tinley, S. B. Dicks, W. Pope, P. D. Tuckett, E. A. Bunyard, O. Thomas, E. Harriss, J. G. Allgrove, W. Bates, W. H. Divers, S. T. Wright, and Ed. Beckett.

AWARD OF MERIT.

Melon, Unnamed Seedling.—This seedling Melon was shown by Mr. A. PERRY, Tendring Hall Gardens, Steke-by-Mayland, Colchester. It was stated to be derived from a Melon sent from Central Asia, which, when crossed with a scarlet-fleshed sort, produced the variety under notice. The fruit is of medium size, oval in shape, slightly reticulated on a pale yellow skin and with light, prominent green lines, equidistant, and running from the stalk to the "eye" end.

The flesh is thick, orange coloured—so that the variety is included in the scarlet-fleshed section—and of first-class flavour. The specimen exhibited was slightly under ripe and the rind was in consequence rather thick; the fruit would contain a large amount of edible portion. In view of the parentage, it is not unlikely that the variety would succeed under frame culture.

OTHER EXHIBITS.

Mr. J. C. ALLGROVE, Middle Green Nursery, Slough, exhibited fruits of Apples Ontario and Delicious, from the 1919 season crop. These late Apples were in good condition, the latter being the better flavoured, although Mr. Allgrove stated that Ontario was superior in cropping and for general garden purposes.

Messrs. RYDERS, LTD., submitted a new Broad Bean named Multiple, for award. The plant bears several stems, all of which crop freely. The variety was recommended for trial in the Wisley Gardens.

The Hon. VICARY GIBBS, Aldenham House, Elstree, Hertfordshire (gr. Mr. Ed. Beckett), showed a collection of vegetables, which was the premier exhibit in the show, and for which a Gold Medal was awarded. On each succeeding occasion that Mr. Beckett exhibits he seems to eclipse all his former efforts, and his display on this occasion was the best he has made. He utilised an ornamental wooden stand on which the various subjects—embracing 100 different kinds in 125 dishes—were displayed in a most attractive manner; indeed, the style in which the vegetables were arranged to produce a pleasing colour scheme was as remarkable as the high quality of the produce throughout. For example, Brazilian Beet, Radishes, Scarlet Potted Beans and Tomatos, in tones of red and scarlet, were disposed in contrast to Golden Waxpod Beans and Golden Capsicums, with dead white Onions of the White Leviathan variety and pyramids of milk-white, Early Autumn Giant Cauliflowers between; and then again purple Kohl Rabi and Crimson Ball Beet were grouped near to masses of coloured Capsicums, Aubergines, and so on, all in a well-considered scheme. Ornamental stands of varying heights were furnished with splendid vegetables, a few of the more noticeable being Ideal and Peerless Cucumbers, new Red Intermediate Carrots, Dobbie's Purple Beet, Tomatos Peach Blow, Sunrise, Yellow Perfection and Golden Nugget, Frootfield Onions of large size; Quite Content Peas, Tender and True Parsnips, Excellent Potatos, Shallots, Aubergines, Mushrooms, and nearly every other kind of vegetable in season.

LAW NOTE.

WEED KILLER POISONING.

At Deptford, on July 9, an inquest was held on the body of Frank Baker, aged 30, gardener, of 21, Braxfield Road, Brockley, S.E., who died in the Miller Hospital, Greenwich Road, S.E., from the effects of poison.

Mrs. E. Roscoe, of 25, Breakspears Road, Brockley, said that deceased was employed at her house as gardener. On the previous Tuesday she saw him collapse on some steps in the garden, and he said: "Give me something." A doctor was immediately sent for, and while waiting Baker vomited. She said to him, "Why did you do it?" He replied: "I didn't. My old chum. I thought it was beer and I drank it. Silly fellow: why did he do it?—weed killer." Witness added that the "old chum" to whom Baker referred was a gardener who worked at a house in the same street.

Thos Rutt, a jobbing gardener, of Kneller Road, Brockley, S.E., stated that on the Tuesday referred to he was working at 33, Breakspears Road, the garden of which overlooks that of No. 25. He saw Baker on the lawn, and during a conversation he asked him to look after a sack, in which was a bottle of weed-killer. The bottle, which was labelled "Blended Scotch Whisky," had been in witness's possession about 12 months, and he kept it in a cupboard at his house.

The Coroner: Why did you give it to Baker?

Witness: To take care of it for me, as I did not want to use it.

The Coroner: You are sure you told Baker that the bottle contained weed-killer?

Witness: Yes, about a pint and a half, and there is now a quarter of a pint missing.

The Coroner: Did you know it was poison?—Yes.

Dr. Levin, house physician at the Miller Hospital, said that when deceased was admitted he was in a collapsed condition, and died an hour later. The autopsy showed that death was due to corrosive poisoning, consistent with the swallowing of weed-killer.

The jury returned a verdict of "Death by misadventure," and, together with the Coroner, expressed sympathy with deceased's brother, who lives at Exeter.

Mr. Roscoe also tendered sympathy, intimating that he and his wife held a very high opinion of Baker.

The Coroner told Rutt that it was a very unwise thing to put weed-killer into a whisky bottle without labelling it "poison."

ANSWERS TO CORRESPONDENTS.

AMARYLLIS LEAVES DISCOLOURED: *R. S.* The discolouration of the leaves is due chiefly to the natural tendency of the foliage to "ripen" and die down. The undersides of the leaves show some evidence of a very slight attack of thrips. We suggest that rather too much water has been afforded the roots since the foliage reached full development.

COLCHICUMS.—*J. R.* Colchicums, properly known as Autumn-flowering Crocuses, may be planted at any time from now up to the end of August.

GRAPES, DISEASED.—*R. D. and Madersfeld:* The berries are affected with Spot disease, caused by the fungus *Gloeosporium ampelophagum*. Spray the vines and bunches with liver of sulphur, at the strength of $\frac{1}{2}$ oz. in 2 gallons of water, or dust flowers of sulphur on the leaves and bunches, and again at intervals of ten days. It has been found of service to thoroughly wet the rods with a solution of iron sulphate when the vines are dormant. Do not use an excessive amount of rich animal manures on the borders.

HORTICULTURAL INSTRUCTION.—*G. S.* We know of no special school or college where you could receive training that would fit you for the post of instructor in horticulture. The first essential is a thorough knowledge of practical gardening. An elementary acquaintance with the sciences pertaining to the profession, such as botany and chemistry, would stand you in good stead when applying for a post. If you are experienced in practical gardening, your best plan would be to take the course for the national diploma in horticulture.

NAMES OF PLANTS: *N. M.* 1, *Helxine Solieroli*; 2, *Polygonum baldschuanicum*; 3, *Callistemon speciosus*; 4, *Trachelium coeruleum*; 5, not recognised, send better specimen.—*A. E.* *Eucomis punctata*.—*R. P.* 1, *Salvia nemorosa*; 2, *Nepeta Mussinii*; 3, *Hyssopus officinalis* "Hyssop"; 4, *Chimonanthus fragrans*; 5, *Magnolia acuminata*; 6, *Achillea Ptarmica*; 7, *Solidago lanceolata*; 8, *Foeniculum vulgare* "Fennel"; 9, *Melissa officinalis* "Balm"; 10, *Artemisia dracunculoides* "False Tarragon".—*C. G. A.*: *Galium verum*, Lady's Bedstraw.—*A. E. R.*: *Trachelium coeruleum*.

POTATO FOR NAMING.—*J. P.* We do not recognise the variety of Potato. Send to a grower who has means of comparing the tubers, foliage, and flowers with those in his collection; give full particulars as to season, habit, etc.

Communications received.—*A. C.*—W. E. T.—L. H. —G. E. D.—J. E. D.—S. L.—T. B.—A. W.—J. F.—G. H.—C. L.—K.—J. W.—A. E.—J. M.—A. F.—A. C. P.—K. and B.—C. M. F.—J. McP.—M. E. S.

THE Gardeners' Chronicle

No. 1754.—SATURDAY, AUGUST 7, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.4°

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, Aug. 4, 10 a.m.; Bar. 30.0; temp. 65°. Weather—Dull.

The Fruit Crops of 1920.

The tabulated reports on the hardy fruit crops—which in accordance with our custom of many years past we publish in the issue of the first week in August—reveal a serious shortage of the principal hardy fruits, worse even than in 1918, when the yields were regarded by many as the poorest in their experience. It will be seen on reference to the tables published on pp. 71-76 that the shortage is general throughout the whole of Great Britain and Ireland, and that the most unsatisfactory crops are Apples, Pears, Plums, Cherries, Peaches, Nectarines and Apricots. In the case of Apples, which may be regarded as the principal out-door fruit crop, the yield is one of the smallest on record. Less than 10 per cent. of our contributors have a crop equal to the average, and no single correspondent has one exceeding the normal, whilst out of a total of 212 returns no fewer than 191 record an under-crop. The returns respecting Pears are equally unsatisfactory; indeed, the figures are almost identical, as will be seen in the summary on p. 76. It is remarkable that not one of our correspondents has a crop that exceeds the normal, just as in the case of Apples. The Plum crop is one of the most erratic of all, for, whilst many growers have a satisfactory number of these fruits, others have not a single Plum in their gardens and orchards. As it is, only nine out of 210 returns indicate a yield above the average, and the number (60) of full yields is less than half that of the "under" crops (141). The figures with regard to Cherries are almost as unsatisfactory as those relating to Apples and Pears, the deficiency being very serious, although the cultivation of Cherries is not so general as in the case of the other fruits dealt with. The statistics relating to Peaches and Nectarines are in-

teresting, inasmuch as they show an almost identical number of average and under average yields—68 and 64 respectively—but there are only nine cases out of 141 where the crop is recorded as a bountiful one. Apricots are as big a failure as any other fruit, the return showing 22 average yields, 7 excellent crops and 95 under the average, out of a total of 124 records. Small fruits are the most satisfactory of all, and this is true year after year, as our reports consistently prove. It is satisfactory to know that of 213 returns, 140 give an average yield, 58 estimate the crop to exceed the normal, whilst there are only 15 cases of deficient yields. The early promise of a splendid Strawberry crop was not realised, as many of the berries were spoiled by excessive rains, and there are 69 cases out of 213 where the yield was disappointingly small. Nuts are almost as scarce as other fruit crops. The failure of the fruit crops is the more disappointing in view of the fact that the early promise was so good generally. Trees of all kinds blossomed profusely, and the majority of the flowers were strong and well formed. The early spring was unusually mild, and marked by the absence of frost; to its precocity the shortage of the fruit crops may be attributed, for whilst March was unusually mild—with weather almost summer-like, causing the flower-buds to expand weeks before their usual time—April was cold and sunless, and bitter east winds prevailed, with incessant rains. In some districts rain fell on 23 days in April, and the nights were so cold that the thermometer frequently registered frost. However, it was not the small amount of frost, but the incessant rains and cold winds at blossoming time that destroyed the prospects of a good fruit year, and it is well known that excessive wet militates against the successful setting of fruit. There were other contributory causes to the general failure. In the northern parts of the United Kingdom cold, wet, sunless weather was followed by frost in the latter part of May and early in June, and many of the few fruits that had set dropped. In the south a period of drought followed the April weather, and lasted in certain districts until the end of June, with intermittent slight frosts, causing Apples to drop freely. Some of our correspondents attribute the shortage in part to the bountiful crops of last year, the unfavourable autumn of 1919, and the absence of bees, but whilst all these undoubtedly exercised an adverse influence, the main trouble was the cold, wet, sunless weather which followed the abnormally early opening of the blossom.

The Neill Prize in Horticulture.—Mr. D. Storrie, sen., of the Nurseries, Glencarse, has been awarded the Neill prize in horticulture by the Royal Caledonian Horticultural Society. This prize is in the gift of that Society, and commemorates the late Dr. Patrick Neill. It is awarded to distinguished Scottish botanists or cultivators. Mr. Storrie is the son of a Midlothian farmer, and has had a distinguished horticultural career. He was apprenticed in his thirteenth year to Messrs. Dicksons and Co., Edinburgh, and after a few years' experience there he was appointed head shopman to Messrs. Laird and Sinclair, Dundee. Six years later he started business on his own account in Dundee as a seedsman and florist, but in 1892 he found that his shop in Dundee was not large enough for his developing business, and, suitable ground being secured, he went to Glencarse. There he carried out extensive experimental work, and was able to further develop the evolution of the Polyanthus and Border Auricula, on which for some years previous he had been working.

Many other flowers were improved by Mr. Storrie, but perhaps his most notable introduction was the Excelsior Iceland Poppy, first sent out in 1902. His early experience of the Glencarse soil led him to recognise that fruit culture would be a success, and in 1894 he planted as an experiment a very comprehensive collection of all classes of hardy fruit, and in a few years his success as a specialist in this line was ensured. In 1910 he was invited to design and advise in the establishment of a horticultural training centre for the St. Andrews Provincial Committee, for the training of teachers, and he acted as teacher and lecturer for two years. This establishment is now well known as the College Garden, Mains, Dundee. Mr. Storrie has been three times President of the Dundee Horticultural Society.

Royal Horticultural Society.—The various Committees of the Royal Horticultural Society will meet as usual on Tuesday, August 10, but there will be no exhibition on that date. On August 24, the usual fortnightly meeting and exhibition will be held; there will be a special show of British-grown flower bulbs on that occasion, and growers are invited to send early varieties of Apples and Pears to the meeting.

New Assistant-Keeper of the Glasnevin Botanic Gardens.—Vacant since the death of the late Mr. C. F. Ball, who was killed in Gallipoli in September, 1915, the post of Assistant-Keeper of the Royal Botanic Gardens, Glasnevin, Dublin, has been filled by the appointment of Mr. J. W. Besant, for 15 years general foreman in the same gardens. Mr. Besant is a son of the late Mr. J. Besant, of Castle Huntly Gardens, Perthshire. He received an important part of his early training in the Botanic Gardens at Glasgow and Kew.

Shrewsbury Floral Fete.—The revival of the Floral Fete at Shrewsbury after a lapse of six years is a matter of great interest and importance to horticulture. The Fete will be held on Wednesday and Thursday, August 18 and 19, in the famous Quarry grounds at Shrewsbury, and as prizes to the value of £1,300 are being offered, an exhibition as fine as any held in the past is anticipated. The bands of the 2nd Life Guards, The Royal Scots Greys, the Coldstream Guards and the King's Shropshire Light Infantry have been engaged and will give an unbroken musical programme on each day.

Elstree Challenge Cup for Vegetables.—Our contributor, Mr. James A. Paice, gardener to the Rev. Edgar Stogden, Aldenham Vicarage, has won the handsome Silver Challenge Cup offered at the Elstree Summer Show, as a prize for a collection of vegetables. The cup was presented by Mrs. R. H. Attenborough, Elstree, and had to be won three times before becoming the property of the prizewinner. Mr. Paice secured the cup at the recent exhibition by winning it for the third successive time.

Société Dendrologique de France.—The French Dendrological Society resumed its interesting series of dendrological excursions, which were interrupted by the war, by a visit to Mme. Philippe de Vilmorin's collection of trees and shrubs on July 18. The importance of the collections brought together at Verrières by the Vilmorin family is well known, and Mme. de Vilmorin herself did the honours of the place to her guests on this occasion. In addition to the classic trees at Verrières, interesting by reason of their dimensions or of their rarity—*Juglans Vilmoriniana*, *Ulmus Shirashawana*, *Abies Vilmorinii*, *Castanea vesca heterophylla*, *Zelkova crenata*, *Quercus heterophylla*, *Pinus Bungeana*, *Abies Pinsapo*, and *Cedrus Libani*—the following species most attracted the attention of the members of the Society:—The series of Japanese Oaks, the important collection of Conifers, the *Rhododendrons*, new Chinese *Abies* and *Piceas*, *Picea morindoides*, a curious form of *Fraxinus americana*, the rare *Cerasus acidula* var. *sempervirens*, *Eucommia ulmoides*, *Decasnea Fargesii*, *Magnolia macrophylla*, *Carrierea calycina*, *Eucryphia pinnatifolia*, the *Davidias*, *Ehretias* and *Oreodaphnes*. Besides these

there were the important collection of cones, water-colours, and dendrological works in the library and museum.

Honour for Mr. W. E. Wallace.—The many friends of Mr. W. E. Wallace, of Eaton Bray, Dunstable, will learn with great pleasure of his appointment as a Justice of the Peace, with a seat on the Leighton Buzzard Bench of Magistrates. Mr. Wallace has a national reputation as a grower of fine Carnation blooms for market and is greatly beloved for his kindness and modesty by all who enjoy his friendship. From a very small beginning he has built up a remarkably large business as a flower grower during his 34 years residence at Eaton Bray. He takes a great interest in local affairs and is a member of the Bedfordshire County Council, while in horticultural circles he is member of the governing body of the Chamber of Horticulture, of the British Florists' Federation and of the British Carnation Society.

August Bank Holiday.—The wet and cold weather so generally experienced on Monday, August 2, prevented many hundreds of thousands of people from spending their holiday in the open air. The public parks, Kew Gardens, Hampton Court, and other resorts in and near London, usually crowded on a fine August Bank Holiday, were almost deserted, while Hampstead Heath and the River Thames failed to attract holiday makers. Allotment holders and other amateur gardeners were prevented by the rain from attending to their vegetable or flower crops and were greatly disappointed because their opportunities for gardening have been severely limited by the long spell of wet weather.

American Sweet Pea Society.—That enthusiasm for Sweet Peas continues in the United States is shown by the detailed accounts which have reached us of the American Sweet Pea Society's Exhibition and general meeting held at Boston last month. British cultivators will be interested to learn that the grand prize for a dozen bunches of Sweet Peas was won by a set consisting of the varieties Hercules, Constance Hinton, Mrs. C. W. Breadmore, Mrs. Tom Jones, Bluejacket, Dobbie's Cream, Rosabelle, King Manoel, R. F. Felton, Loyalty, Mrs. W. Cuthbertson, and Royal Purple. Mr. George W. Kerr, formerly with Messrs. Dobbie and Co., Edinburgh, has concluded his year of office as president of the Society, and is succeeded by Mr. W. A. Sperling, of New York, while Mr. David Burpee is the new vice-president. Mr. T. A. Weston, a recent recruit from England, has been added to the committee of the American Society. We gather that the American Sweet Pea seed crop is considerably below the average.

Appointments for the Ensuing Week.—Monday, August 9:—United Horticultural Benefit and Provident Society Committee meets; Bath Gardeners' Society Committee meets. Tuesday, August 10:—Royal Horticultural Society Committee's meet (no exhibition); Royal Horticultural and Arboricultural Society of Ireland's Show (3 days). Wednesday, August 11:—East Anglian Horticultural Society's Show. Thursday, August 12:—Taunton Deane Horticultural and Floricultural Society's Show. Friday, August 13:—Southport Allotment Holders' Show (2 days). Saturday, August 14:—Fossway Society's Show; Stonehaven Society's Show.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Adulteration of Guano.*—Peruvian Guano, it is well known, can only be had at first hand, in London, of Messrs. Anthony Gibbs and Co.; and if wholesale dealers cannot prove that their London-bought Peruvian Guano is derived directly from that source, we advise nobody to become their customers. Not that such a proof would be entirely satisfactory, because the Guano might be adulterated elsewhere than in London, or even in the open stream of the Thames; but still it would be some guarantee of the genuineness of the article. That the Thames is a scene of the fraud we indicated last week; and we have no doubt that the trick is still carried on there, or in the neighbourhood, for Epping loam is sifted and carted away to

this hour. This is a fortunate fact; because it multiplies the chances of detection, and shows the public that what we have been exposing is no bygone roguery, but a fraud still daily practised. We have made out all the facts connected with this phase of the Guano trade. We have the names of all the parties concerned in it, their residences, and occupations, and we have traced the operation to the rascal who has cheated the country in the shape of a London merchant. This information we reserve for production in a court of law if anyone should think it advisable to bring actions against the gentleman or his agents. Such is the course which purchasers should pursue; and we will gladly give their solicitors all the intelligence that we have procured, at considerable expense, upon this nefarious subject. What we would advise is this. Let every one who has bought Guano test it by the following simple process. Put a couple of ounces into a crucible, and heat it to redness in a fierce fire. If genuine it will become black; and when the burning has been carried on long



FIG. 31.—A BEECH TREE AT HANOVER LODGE, REGENT'S PARK, KILLED BY BEECH COCCUS AND SILVER-LEAF DISEASE.

enough it will change to a white ash, losing about half its weight, or even more. But if loam has been mixed with it, the ash will be red or pink, and the loss of weight will be much less. In the latter case the sample is to be suspected, and should be put into the hands of a chemist, who would, for a very small fee, decide immediately whether earth had been used for adulteration or not. If that is found to be the case the buyers should immediately bring actions against those who sold them the Guano; and the latter can in turn proceed against the gentleman in London. There can be no doubt about the result, with a jury of farmers, or gardeners. *Gard. Chron.*, August 9, 1845.

Publications received.—*Boels*. G. T. Burrows, *Country Life*, Ltd., 20, Tavistock Street, London, W.C.2. 1s. net. *Bulletin of Peony News*, Nos. 11 and 12. American Peony Society. *Practical Plant Biochemistry*. Muriel Wheldale Onslow, Cambridge University Press. Price 15s. *Carnation Year Book*. British Carnation Society. 2s. Hortus-Printing Co., Ltd., Burnley.

NOTICES OF BOOKS.

The Nature Study of Plants.*

We can imagine no more difficult task than that so often attempted of writing a book on Nature Study which shall achieve the one essential aim which such books should have—that of creating or evoking an abiding and intelligent interest in the life of plants and animals. To succeed, the author must, though an enthusiast himself, be able to steer a middle course, avoiding the Scylla of specialism and the Charybdis of commonplaceness. Mr. Dymes, whose book is to be wholly commended, has come very near to producing the ideal book. If only he could have had the inspiration to leave out the first half, which deals with general botany and expand the second half which recounts his own observations on the common weed—Herb Robert (*Geranium Robertianum*)—he would, we think, have written a classic. For one reason or another, however, he has preferred to go over the general ground first, to illustrate the facts of respiration and of nutrition and the like, in introduction to his own delightful and careful study of the life of a plant.

From a perusal of his second part—the Herb Robert part—we are convinced that the best way to attract and retain the interest of the young student of Nature Study is to show him in all essential detail the life and work of a plant which he himself can grow and watch, and, having done that, to let his knowledge widen out by a series of comparative observations on that plant and its near and distant relations. Whether, however, we are right or wrong in this view, there can be no doubt but that Mr. Dymes has produced a delightful little book. The style is simple and sufficiently restrained, and, above all, the pages of the book provide ample evidence that the author is an acute observer—and that is the kind of wit that a writer on Nature Study must possess if he is to impart it to others.

The Schrebergardens of Vienna.

A LITTLE book of over 100 pages has just been published by the Central Allotment Society of Vienna for the purpose of aiding the rapidly increasing number of allotment holders in that city. The authors give the history of allotment gardens in Central Europe, and interesting statistics and other information concerning the development of allotment gardening during the last few years. As the allotment holders do not confine themselves to vegetables, but are interested also in the cultivation of fruit and the rearing of rabbits, chickens, and bees, there are chapters dealing with these subjects. The methods of organising and laying out of a colony of allotment gardens fill other chapters.

The authors point out that allotments were started in Kiel (Germany) as far back as 1820, and in 1912-13, with a population of 163,772, there were 10,082 gardens in that city, bringing in a rent of 91,794 marks. In the same year there were about 40,000 allotments in Berlin. But Dr. Schreber, who died at Leipzig in 1861, was the real pioneer of allotment gardens in Central Europe, and as a consequence allotments are there invariably known as Schrebergardens. His original object in establishing small gardens outside large towns was to improve the health of the children. The gardens each had a wooden hut, so as to afford shelter to the parents and children in bad weather and for the preparation of meals. Schreber's idea was that while the children passed their time in the large playing ground generally situated in the centre of a colony of gardens, the parents would tend their gardens, mostly planted with flowers and fruit trees. However, during the last few years the gardens have been solely used for the cultivation of

* *The Nature Study of Plants*. By T. A. Dymes, F.L.S., with an introduction by Prof. F. E. Weiss, F.R.S. Published by the Society for Promoting Christian Knowledge. London, 1920. Price 6s. net.

† *Wiens Schrebergärten*. By F. Siller and Camillo Schneider. Pp. 112, 30 illustrations. Central Allotment Society of Vienna, 12, Kaiser Wilhelm Ring, Vienna.

vegetables and the raising of small live stock—in short, for food production.

The first Schreber garden or allotment garden was started in Vienna in 1903, and little interest was taken in the scheme until the autumn of 1914. By the autumn of 1915 there were just over 3,000 gardens, a year later about 6,000, and by the autumn of 1919 they had increased to about 40,000. The produce that year was estimated at 2,500 railway truck loads of vegetables and Potatoes, while about 150,000 rabbits had been reared on the gardens, as well as 120,000 head of poultry, with an egg production of 9,000,000, and 2,000 goats with a milk production of at least 500,000 quarts. The total value of the produce was estimated at 50 million kronen.

The demand for allotments around Vienna is still increasing owing to the terrible scarcity of foodstuffs which is greater now than during the war. At the present time every hillside and former military training grounds around Vienna are being converted into allotments. Under the direction of the Schrebergarten Committees land is broken up by steam ploughs and supplied with water free of charge. As a rule these allotments are from 200 to 400 square yards in extent, each with a little hut for a summer dwelling, but all the huts must be of the same size and shape in accordance with the Committee's regulations. The plots are fenced in, and part of the ground is allotted to vegetables, a part to fruit trees, and another part to the rearing of rabbits, poultry, and bees. Everything possible is done to assist the allotment holders to produce food.

INDOOR PLANTS.

INCREASING CINERARIAS BY MEANS OF CUTTINGS.

THE interesting article on "Cinerarias" (page 49) refers only to raising the plants from seeds, but it should be borne in mind that Cinerarias may be increased by means of cuttings. This mode of propagation is extremely useful in the case of a plant that shows distinctive qualities and which seedlings might not be depended upon to reproduce.

For many years I grew a very pretty Cineraria raised at Kew, known as Lady Thiselton-Dyer. This, as far as I knew, never produced good seeds, and was consequently always increased by cuttings. The practice was when the flowers were over to cut the plants partially down, leaving some of the leaves on the stem. In due time young shoots appeared from the base. When these were about 2 inches or 3 inches in length they were used as cuttings, inserted in pots of sandy soil, and placed in a close propagating case in a gentle heat. They soon rooted, were potted off singly, and afterwards treated in the same way as seedlings. W. T.

LILIUM NEILGHERRENSE.

WHILE some of the newer Lilies have become very popular during the past few years, some of the older ones are gradually dropping out of cultivation. Among the latter must be included *Lilium neilgherrense*, which at one time used to form a by no means uncommon feature in the greenhouse from August onwards. It is a native of the Neilgherry Hills, hence it needs protection in this country. This Lily is very difficult to establish, and as a rule imported bulbs flower better the first season than they do afterwards. It belongs to the trumpet-shaped group, and has one of the longest flowers of all. The blooms are for the most part of a creamy tint, but in this respect there is a certain amount of individual variation, for I have had flowers nearly white, and occasionally suffused with purple on the exterior.

In the eighties of the last century there was for some years an annual display of this Lily in the nursery of the late Mr. William Bull, at Chelsea. They were the produce of collected bulbs, of which Mr. Bull used to import a considerable number. They would, however, appear to have become more difficult to obtain, pro-

ably because their native habitats were closely searched, with the result that bulbs are no longer found in quantity; indeed, *L. neilgherrense* seems to have almost disappeared. When growing it, I have noticed that very frequently the stem of this Lily, when it emerges from the top of the bulb, does not appear above ground, but proceeds horizontally till the edge of the pot is reached, when it will take a downward direction and come up on the opposite side of the pot. The charming *Lilium Leichtlinii* will sometimes behave in the same way. T.

THE FLOWER GARDEN.

SALVIA PRIDE OF ZURICH.

THE value of this *Salvia* as a summer bedding plant during a wet season has been abundantly proved this year. After three weeks of almost continuous rains the Zonal Pelargoniums wear a dilapidated appearance, but plants of *Salvia Pride of Zurich* show no signs of ill-effect as a result of climatic conditions, and provide a brilliant display of scarlet bloom, which is well set off by the

TREES AND SHRUBS.

THE BEECH IN LONDON.

SOME of the finest Beech trees in the London area are to be seen by the banks of the Regent's Canal. That at Grove House is a majestic specimen (see Fig. 32), with a huge bole and far-spreading head of the healthiest foliage. Growing on the opposite side of the Canal, in the grounds of Hanover Lodge, there are also some magnificent Beech trees that were in all probability planted when the Canal was made about a century ago. Unfortunately, the chemical and other impurities of the London air are responsible for the death of many fine old trees by lowering their vitality and exposing them to attacks of both insects and fungi. Both the Beech Coccus (*Cryptococcus fagi*) and the Silver Leaf disease (*Stereum purpureum*) have been on the increase of late years, and the accompanying illustration (Fig. 31) shows one of the Beech trees at Hanover Lodge that has been killed by the attacks of the fungus. So persistent is the attack that only eight months elapsed between the first appearance of the fungus and the death of the tree. A. D. Webster, Regent's Park.

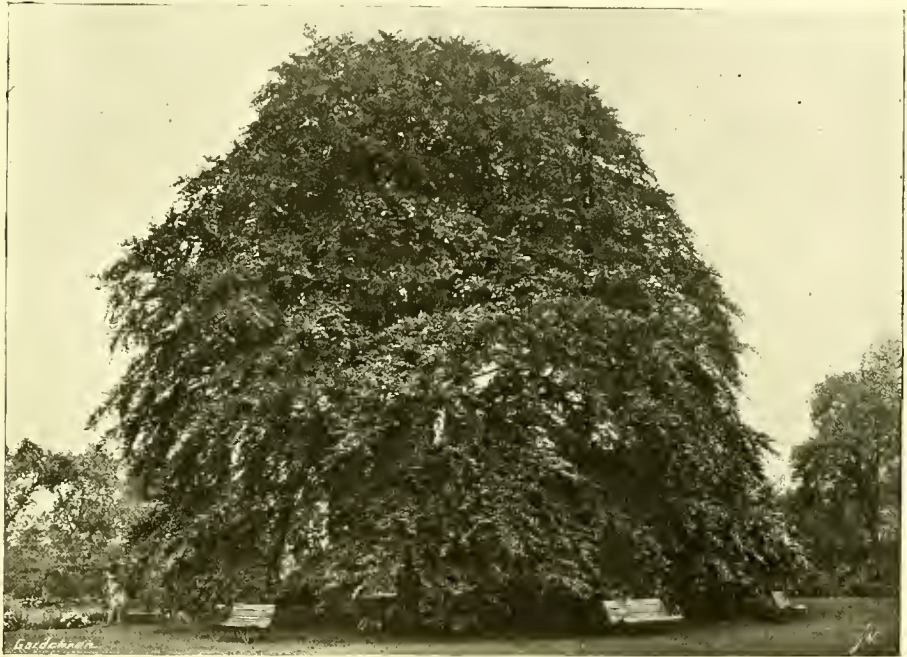


FIG. 32.—A FINE BEECH TREE AT GROVE HOUSE, REGENT'S PARK.

dark green foliage. The floriferous character of the plant tends to exhaustion. I find a light dressing of sulphate of ammonia scattered over the beds just previous to planting is of great assistance to this plant; and whilst it promotes free growth of foliage it does not lessen its tendency to flower freely.

The cultivation of this Sage is simple. In the autumn lift the plants from the beds, place them in pots, and, after removing the flowers, stand them in a warm house until the roots become active again. They may be wintered in a warm greenhouse, and should be kept on the dry side. Late in January they should be cut back fairly hard, and, as soon as they break into growth, they should be repotted in open, loamy soil. This treatment ensures a good supply of cuttings by the end of March. These are inserted in sand in a close propagating frame, where they will root in about fourteen days, when they should be potted singly in small pots and grown in a house having a temperature of 60 degrees. When ready, they should be transferred to 5-inch pots, and, after being stopped, will make large specimens ready for transplanting in the flower garden at the end of May. If propagated earlier, they become starved and liable to attacks of red spider. H. Wheeler.

EUCALYPTUS FICIFOLIA.

I send for your inspection a flowering spray of *Eucalyptus ficifolia*, which I trust may be of interest. The specimen is one of a dozen sprays cut from a plant raised from seed five years ago, and which has now attained a height of 18 feet. It is growing in a cool house, with full exposure to the sun. I should be glad to have your opinion as to the possibility of naturalising this plant in our extreme southern district. W. H. Hones, Walkhampton Gardens, Lymington, Hampshire.

[The handsome branching head of blooms received from Mr. Hones measured 15 inches in width and 14 inches in height; it carried 21 expanded flowers and 63 unopened buds. The expanded blooms were masses of cerise-red stamens and the effect of the whole inflorescence was very fine. *Eucalyptus ficifolia* is hardy in certain southern gardens and an illustration in *Gard. Chron.* of November 30, 1917, shows flowers produced out of doors in the gardens of W. N. Row, Esq., Cove House, Tiverton, Devon. In the same issue there is a record of *E. ficifolia* flowering when seven years old from seed, in a cool Palm house at Lathom Grove, Arbroath, N.B.—Eds.]

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Funkia.—Plantain Lilies, with their noble foliage, are suitable for various positions in the flower garden. Almost any soil is suitable for them but the foliage is more effective when the roots have a deep, free run. They are unequalled as an effective edging to beds of Tamarix and Bamboo which may skirt the sub-tropical garden. Slugs and snails are partial to the young leaves of Funkia Fortunei and often cause considerable damage to this sweetly scented species.

Future Plans.—The formal bedding and general summer displays are not yet at their best in this district, which, given an average season, is naturally late. As the various schemes develop a record should be made of successes and plans made for next year. Allow a fair margin for emergencies in arriving at the numbers of each kind or variety of plant to be propagated and make an early start with this work. I do not advocate the propagation by cuttings of plants which grow equally well and true from seed, especially as the wintering of many tender store plants is a source of trouble. In some instances seedlings do not make such dwarf or compact plants as those grown from cuttings; this may be overcome by sowing seeds early in the new year and making cuttings of the tops of the young plantlets. As an example, *Salvia splendens* may be cited. Take a careful survey of the garden and make records of scenes which may be improved. Endeavour to keep the garden scrupulously clean so that the utmost pleasure may be derived from it.

Cistus.—Unlike many hybrids, and varieties *Cistus crispus* is adaptable to most localities, and is a useful plant for exposed rock gardens. The rosy-pink flowers are borne on compact bushes not more than two feet high and are produced freely from June until November. Sandy loam is the best medium in which to plant all kinds of *Cistus*, as they are liable to make sappy growth in rich soil and ultimately succumb during winter. Stocks may be increased by means of seeds or cuttings, both of which require shelter, the young plants being planted in the open in late spring.

Silene.—August is a suitable time in which to sow seeds of varieties of *Silene* for spring bedding. As a groundwork to Tulips and as an edging to Wallflowers *Silene pendula compacta* is pleasing. Prick out the seedlings when quite small in comparatively poor ground to prevent an over luxuriant growth. *Silene Schafta* is a useful perennial for the rock garden and may be planted out during the next few weeks.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Apple and Pear Crops.—It is now evident that except in a few isolated instances the Apple and Pear crops will be below the average. It is desirable, therefore, that where the crop is a light one, every fruit may have the opportunity of developing to the largest size. Too often when the crop is a light one it is neglected, whereas that is just the time when extra efforts should be made to mature and store the crop in the best possible condition.

Summer Pruning.—The month of August is the time in which to carry out the summer pruning of bush Apple and Pear trees. I have found that if growths are shortened early in July secondary growth forms, and a further pinching is necessary to prevent the trees from becoming a crowded mass of young shoots. This defeats the object in view, i.e., the forming of fruit buds. In summer pruning the side shoots should be cut back to within four or five leaves of their base. It is a good plan to attend to the upper parts of the tree first and the lower portion ten

days or a fortnight later. It is the practice here to leave the leaders unshortened, but if leaders show exceptional vigour they may have their tips removed. Leaf-curling Aphis have been very troublesome this year, and where fruits have been deformed by this pest, even if the crop is light, they are best removed while summer pruning. Another point that deserves attention is the removal of leaves that keep the fruit from full exposure to light. It is only by paying attention to these little details that perfect and highly-coloured fruits may be obtained; the extra trouble will be well repaid.

Storage of Nets.—Nets that have been used for the protection of various fruits from birds should be immediately removed after the crops are gathered. Fold and store the nets in a dry condition.

PLANTS UNDER GLASS

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Dimorphotheca Ecklonis.—If cuttings are not already inserted they should be made from suitable shoots and rooted in a cool propagating case. This plant has a rather lax habit and frequent pinching is necessary to induce a bushy growth. It is a good plan to root three or four cuttings in a small pot and then pot them on. Where large plants are required, plants propagated last year, and cut back after flowering, should now be afforded larger receptacles.

Senecioglastifolia. This pretty South African Groundsel should be propagated by means of cuttings inserted now. It is best grown in perfectly cool conditions, for if kept close the growth will be weak and spindly. Like the *Dimorphotheca*, frequent stopping is necessary to obtain bushy plants.

Arctotis.—The South African *Arctotis aspera*, *A. revoluta* and *A. aureola* are all useful for conservatory furnishing, and may be grown as large specimens, although young plants generally prove most useful. *A. aspera* and *A. revoluta* are easily propagated in a cool house by means of cuttings. *A. aureola* is the best garden species, and always has been a scarce plant as it is very difficult to propagate from cuttings. It is, however, easily increased by layering in a cold frame. The brilliant orange-yellow flowers are so showy that the plant is worthy of extended cultivation.

Bulbs for Forcing.—The success or failure of bulbs for forcing depends largely on their being potted up early, for without a well-developed root system it is impossible to secure success in forcing. All bulbs intended for early forcing should, if possible, be potted some time during August. A start should be made with Roman Hyacinths and Paper White Narcissus for Christmas flowering; in fact, all Narcissus are best potted this month, as they start to make fresh roots as soon as their foliage has died down. The importance of ordering bulbs early, and potting them as soon as they come to hand, cannot be overestimated. Five bulbs of Roman Hyacinths may be placed in a five-inch pot, while of most Narcissus five or six bulbs in a seven-inch pot will suffice. Tulips of the Duc Van Thol type may be potted, but where required in quantity for decorative use they are best planted in small, shallow boxes, from which they may be lifted when in flower and used in bowls and ornamental pans. The potting soil should be sufficiently moist to obviate the necessity of watering the soil directly after potting. The potted bulbs should be stood in the open or at the base of a wall, and covered with sifted ashes or leaf soil. If ashes are used, they should have been exposed to the weather for some time, as fresh ashes may contain harmful ingredients. They will require no further attention until they are well rooted and have started into growth, when they should be transferred from the ash-bed to cold frames.

South African Bulbs.—Such popular and useful subjects as *Freessias* and *Lachenalias* should be potted in August, but *Ixias*, *Babianas*, *Sparaxis* and *Tritonias* may be potted next month.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pineapples.—As soon as the earliest house is cleared of fruit it should be thoroughly cleansed, but the plunging material need not be turned out unless new material is necessary or woodlice are numerous. The most forward successional plants may be plunged two feet apart as soon as the bottom heat has, in the case of new material, declined to 85°. Let the day temperature be 85° to 90°, falling to 80° at 10 p.m. and to 70° by daybreak. Damp the paths and sprinkle the plunging material with water in the morning and evening of fine days.

Successional Plants.—Queen Pineapples intended for starting early next spring may be kept progressing a little longer, but as a certain amount of rest is essential, the supply of water should be steadily reduced and the temperature lowered, with the admission of more air during the late summer months. Cease syringing the plants overhead, but damp the paths and the surface of the beds on favourable occasions. All other plants should be kept growing steadily until growth is fully made.

Suckers.—The latest Pineapple suckers should now be put in, in order to have them well rooted before winter. Use a fibrous compost, thoroughly warm and fairly dry so that it may be rammed firmly. Use clean pots and afford ample drainage. Provide more root room for any suckers which have filled their pots with roots. These plants should not require water for a week or ten days after potting takes place, unless the new soil was very dry. Lightly spray the plants with tepid water and shade them lightly during bright sunshine for the first fortnight after potting, but do not allow the shading to remain over the plants longer than is necessary.

Figs.—Fig trees in full bearing will require abundance of air and should be syringed freely about the stems; a cold damp atmosphere, however, must be guarded against, especially during cold nights. Judicious thinning and good feeding are essential to the best results, and nothing is gained by trying to keep the trees in bearing after fruits are ready in unheated houses.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wedgwood Castle, near Cardiff.

Runner Beans.—When the shoots have reached the tops of their supports, they should be stopped. Where the laterals have been removed it is advisable to limit the number of flowers on each spike to about twelve blooms. The Beans should be gathered as they become fit and, if some are required for seed, retain a plant producing Beans of exceptional length and merit for the purpose. Runner Beans should receive liquid manure regularly, and at no time should they be allowed to become dry at the roots.

Dwarf Beans.—Frames or pits that can be spared may be profitably utilised to extend the season of this vegetable. The seeds should be sown now and the seedlings thinned later, to leave the plants one foot apart each way. Towards the middle of September, when cold nights are expected, they should be protected by lights.

Spinach.—A sowing of prickly seeded Spinach should be made now, to be followed by another sowing at the end of the month. A well drained position in a sheltered part of the garden should be selected for these sowings. Sow the seeds in drills drawn fifteen inches apart, and thin the seedlings to six inches apart. Spinach Beet should also be sown, and although this does not possess the culinary value of the true form, it may be depended upon to provide a continuous supply of leaves should the true Spinach not prove hardy.

Endive.—Seeds of both the curled and Lettuce-leaved varieties of Endive should be sown thinly in drills fifteen inches apart. As soon as the seedlings become large enough, they should be transplanted to a light, well-drained border, allowing them a foot apart each way. Should

the weather be dry, growth must be encouraged by watering.

Lettuce.—Seeds of hardy Lettuces, such as Black-seeded Bath or Hardy Hammersmith, should be sown to provide for the winter supplies. The seed-bed should not have been manured recently, the aim being to grow the plants sturdily.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq.,
Castleford, Chesham.

Treatment of Newly Potted Sobralias.—The plants will need special treatment until they are re-established. They should be placed in a part of the Cattleya house where they may be well shaded from the sun's rays, sprayed frequently overhead, and have their surroundings kept moist. Careful watering is necessary or the roots will decay. Small, healthy specimens that have filled their receptacles with roots may be repotted without root disturbance in a pot one or two sizes larger than the old one. These will feel no ill effects from the change if the roots are not overwatered. Many of the Sobralias produce top-growths which may be used for propagating purposes. These should be removed when roots are formed, placed in small pots, and given a larger receptacle when needed. Sobralias are not fastidious in regard to temperature; they will grow in almost any division, but it is not advisable to place them in the warmest house or thrips may be troublesome. A corridor attached to plant houses is a very convenient place for growing many Orchids, including Sobralias, and their evergreen and ornamental character even when out of flower render them suitable subjects for such a position. A few Sobralias worth growing are *S. Lowii*, *S. macrantha*, *S. xantholeuca*, *S. rosea*, and *S. Lucasiana*, with the hybrids *S. Veitchii*, *S. dellenae*, and *S. Amesiana*.

Neobenthamia gracilis.—This Orchid is not often met with, but large plants are attractive and useful for furnishing corridors or large houses. It is of easy culture and grows well in leaf-soil. Healthy plants that have filled their pots with roots require an abundance of water and occasional spraying overhead. Top growths are produced, as with Sobralias, and may be treated similarly. Unless more plants are needed these top growths should be cut off in the early stage and only the basal growths allowed to develop. Repotting may be done at any time; *N. gracilis* is a strong rooting subject and requires ample root room.

Trichopilia.—The species of *Trichopilia* are not grown in quantity, but most of them are worthy of a place in every collection of Orchids on account of their large, showy flowers, some of which are delightfully fragrant. The most noteworthy species is *T. suavis*, but *T. fragrans*, *T. coccinea*, with its various forms, *T. sanguinolenta*, *T. Backhouseana*, *T. albidia*, and *T. fortis* are also desirable. For the greater part of the year they may be grown in the intermediate house, but while they are in a state of activity a few degrees more warmth is beneficial. The flowering season is an extended one, so repotting should be done at different seasons, in accordance with the growth of the particular species or variety. The best time to repot is soon after the flowering period, and the plants are usually placed in shallow pans without side holes. Wire handles should be attached to suspend the plants from the roof rafters so that the drooping flower scapes may be seen to advantage. Provide the pans with ample drainage material, and use a compost of *AI* fibre or good quality peat three parts and one part Sphagnum-moss and partly decayed Oak or Beech leaves. Make the compost firm, but do not elevate it above the rim of the receptacle. A high temperature is detrimental to these Orchids, and they will not thrive in a close stuffy atmosphere. Careful watering is essential at all times, and it should be borne in mind that the new pseudo-bulbs are nearly complete before root action is very vigorous. It is at this stage they should be repotted. When the pseudo-bulbs are fully matured, water must be afforded in moderation.

THE ALPINE GARDEN.

CAMPANULA GARGANICA TULLY'S VARIETY.

So far as I have seen, Tully's variety of *Campanula garganica* is the finest to be met with at the present time, as distinct from *C. g. hirsuta* and its varieties. I saw the variety in the Royal Botanic Gardens of Edinburgh recently, and had an opportunity of comparing it with that justly admired variety *C. g. W. H. Paine*. Of the two I certainly consider Tully's the finer variety. The shade of blue may be a trifle different, but the tone is so close one cannot be certain that there is a difference. The flowers are larger and the whole plant delightful, with its branches thickly set with charming blooms of deep blue colour and a white centre. I know nothing of the origin of this novelty, but its raiser is surely to be congratulated on its production. The Edinburgh plant was doing well on a little flat portion of the rockwork.



FIG. 33.—*ERYSIMUM LINIFOLIUM* IN THE FLOWER BORDER AT WISLEY.

ETHIONEMA STYLOSUM.

In the numerous alpine flowers which bear the ponderous name of *Ethionema*, we have few more lovely than *E. stylosum*, one of the neatest and dwarfest of the genus. It is only some three or four inches high, and sends up little stems, clad with pretty leaves and crowned with good-sized heads of pink flowers. Like most of the race, it loves lime in some form or other, and thrives best in a dry, sunny place. It is one of the many alpine which appear to flourish in the great rock garden of Edinburgh's Royal Botanic Gardens, where Professor Balfour has gathered together such a wealth of the best Alpine flowers. *A.*

ERYSIMUM LINIFOLIUM.

The general effect produced by *Erysimum linifolium* is similar to that of a dwarf, bushy Wallflower, with narrow leaves surmounted by lilac-coloured flowers, and it is not surprising that the plant has been exhibited as *Cheiranthus linifolius*. The species is a native of Spain and Portugal and, apparently, loves sunshine. Doubts have been expressed as to the duration of the plant under cultivation, but in the Royal Horticultural Society's Gardens, Wisley, it is undoubtedly perennial. When once established plants need little attention beyond an annual clipping over after the flowers have faded. In the mass, *Erysimum linifolium* is a most effective subject either for the rock garden or the flower border. At Wisley it has been greatly admired during the spring and early summer of this year both in the rock garden and as a marginal group in the herbaceous border. It seeds quite freely in a sunny position, and stock may be increased either by means of cuttings or by sowing seeds.

In addition to its value as a decorative plant in the flower border and in the wider spaces of a rock garden *Erysimum linifolium* appears to be a plant which would lend itself to the decoration of the formal flower garden in spring and early summer, either alone or in association with the other subjects that come under the comprehensive title of "spring bedding plants." In this connection it is certainly worth a trial, and those gardeners who are ever on the lookout for novelty should test its capabilities. Messrs. Watkins and Simpson offered seeds of *Erysimum linifolium* in 1919, but the plant was in cultivation in a few gardens some time previously. The illustration (Fig. 33) shows the plant growing in the flower border at Wisley. *C. B.*

ATRAPHAXIS BILLARDIERI.

THERE is a good specimen of this uncommon plant in the famous Rock Garden of the Royal Botanic Gardens, Edinburgh. It is high up on a knoll of the rockwork and is apparently quite happy. It was full in flower in the second week in July and was highly pleasing, with its

attractive pinkish flowers. The genus *Atraphaxis* is closely allied to *Polygonum* or Knotweed. The species are generally natives of hot, dry districts, and our humid climate does not altogether suit them. *A. Billardieri*, which is a native of Greece, Syria, and Asia Minor, should share this dislike to much moisture, but it looks quite happy in Edinburgh. It has been skilfully placed, high up on a dry point of the rockwork, so that it should have every chance of showing its adaptability. It is a somewhat trailing plant about six or nine inches high. *S. Arnott.*

CAMPANULA ALLIONII.

It is quite evident that the cultivator of this *Campanula* in the Botanic Gardens of Edinburgh knows how to grow it. A fine plant was in remarkably good condition in the rock garden there in the second week in July and showed by its vigour and healthy look that it appreciated the fare provided for it. It was in a sloping "pocket," surfaced with chips, and the conditions seemed as near to the moraine treatment now recommended for it as possible. It was very charming, with its rather silvery foliage and its bells of lovely blue purple. These bells are large for the size of the plant and, as seen in Edinburgh, were very fine indeed. It is sometimes a victim to slugs in wet autumns and springs, but in stony soil, with plenty of grit about, it is not so exceedingly difficult to cultivate. It is one of the plants worth consideration, and ranks high among the best alpine flowers. By the way, it is now called *C. alpestris* by certain high authorities, but the name of *C. Allionii* will be difficult to relegate to oblivion. *S. A.*

EDITORIAL NOTICE.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

FRAGRANCE IN THE H.T. ROSES.

ONE of the most fragrant of Hybrid Tea Roses is Mrs. Bryce Allan, introduced by Messrs. Alexander Dickson and Co. in 1914. It has considerable merit as a garden plant, for it grows well and is of good habit, and the flowers are freely produced. It has plenty of petals, and is what is known as a "full" Rose. As the flower stands well, it may be used in the exhibition box if desired for that purpose. Though not markedly a high-centred flower, it is quite nicely shaped, with well-arranged petals. I have occasionally seen a quartered flower, but not often. The official description of the colour is coppery carmine, but this does not give me a very accurate idea of the shade of colour, which seems rather a deep salmon pink. As it is such a very fragrant Rose, the smaller flowers are pleasant to wear in the button-hole. The foliage is good, and, so far, has not suffered from disease in my garden. The variety seems to have so many good qualities that I regard it as one of my most successful experimental purchases among the newer Roses.

Mrs. Bertram Walker (Hugh Dickson, 1915) has a somewhat similarly shaped flower, but is of a brighter tint, not inaptly described as cerise pink. It is, however, more stumpy in its habit of growth, and has not the fragrance of Mrs. Bryce Allan, consequently the latter is to be preferred as a garden plant.

We have none too many Roses amongst the H.T.s which are really fragrant with the Damask perfume. I am not thinking now of those which possess more or less of the Tea Rose scent. Of the crimsons, General McArthur possesses fragrance in a marked degree, and Richmond and Hoosier Beauty have quite a refreshing amount, but in many of the new Roses of this shade, particularly those of bright scarlet crimson hue, such as Red Letter Day and Col. Oswald Fitzgerald, it is curiously and disappointingly absent. I purposely omit Chateau de Clos Vougeot, which is fragrant, but seems to me to partake more of the China Rose characters.

It would be far easier to pick out half a dozen pink H.T.s with fine perfume. In addition to Mrs. Bryce Allan, Mrs. George Norwood, Colcestria, Gustav Grunerwald, Mme. Maurice de Luze, Lady Alice Stanley, and Mme. Abel Chatenay occur to one at once. Most of these are good garden Roses, but Mrs. George Norwood, though the flower has wonderful lasting qualities when out, is a poor grower, and seems best when budded and allowed to remain without removal, while Colcestria is too strong a grower for an ordinary bed, and perhaps may be best pegged down or trained fan-wise. It hardly flowers freely enough when trained to a pillar.

Of Roses coloured blush to white, the most fragrant I can call to mind are Augustine Guinoisseau, which has the fragrance of its parent, La France; and Mrs. Elisha Hicks, which for a Rose of its colour is quite remarkable for its perfume.

The yellows are, to me, innocent of Rose perfume. Certain of them, such as Mme. Ravary, have the Tea scent, but that is a different matter.

At our Rose shows the appeal to the eye is very powerful, and we are given a large variety of striking and wonderful shades of colouring. In this respect Mr. McGredy and M. Pernet-Ducher seem to wave the magic wand and produce truly marvellous results. Might not some enterprising hybridiser devote himself to perfecting fragrance in the Rose? Some of the old summer-flowering Roses, the Gallicas and Damasks, were full of fragrance. Might not a measure of this be worked into the beauty of more of our modern H.T.s? *White Rose.*

ORCHID NOTES AND GLEANINGS.

THE FERTILISATION OF SERAPIAS CORDIGERA AND S. LONGIPETALA.

MR. J. TRAHERNE MOGGIDGE (in *Jour. Linn Soc.*, Vol. VIII., No. 32, 1865) gives a figure of the column of *Serapias cordigera*, L., and says that he caught an insect (*Ceratina albilabris*) in the act of touching the stigma with the yellow

that he was a prisoner. He at once became extremely active, searching eagerly for a way of escape. He had a pair of *S. longipetala* pollinia on his head, and proved to be *Osmia leiana* ♂. Meanwhile two more bees of the same species had appeared on a gauze fly-curtain over the window, evidently from the spikes of *S. longipetala* in my vasculum. I had secured no less than three specimens in my gathering of the previous days. Apparently the male *Osmia leiana* makes a practice of sleeping in the tubular flowers of *Serapias*, which are admirably adapted for the purpose. Both *S. cordigera* and *S. longipetala* are evidently visited and fertilised by the same bee, which would account for the occasional appearance of hybrids between them.

Hermann Müller on several occasions found a small bee in a torpid condition in the slipper of *Cypripedium Calceolus* in the early morning, and attributed its drowsiness to the intoxicating effect of the honey in the flower, but it is more probable that the insect was simply asleep. These facts are interesting as showing that the fertilisation of Orchids does not necessarily always occur through the visits of insects in search of honey, but may also be due to their seeking a safe hiding place for a night's lodging.

It is possible that the peculiar construction of



FIG. 34.—ODONTIODA DAUNTLESS VAR. BLUE BIRD.

pollen of *S. lingua*, two pairs of pollinia of which were fastened to its head.

Although I have seen some hundreds of plants of both *S. cordigera* and *S. longipetala*, Poll., I have never had the good fortune to see any insect actually enter the flowers. A lucky accident, however, threw light on the question of their fertilisation. On April 15, 1920, at Hyères, France, my attention was called to a small bee crawling on some specimens of *S. cordigera* gathered the previous day. It had a pair of green pollinia attached to its head, which, on comparison, proved to be those of *S. cordigera*. The bee was identified by Mr. Willoughby Gardner, F.L.S., as *Osmia leiana*, male. On April 22, on the hills at the back of Hyères, the tail of a bee was observed in the throat of a flower of *S. cordigera*, which also turned out to be *Osmia leiana* ♂, and had two pairs of *S. cordigera* pollinia on its head.

On May 22, 1920, in the late afternoon, at Venice, Alpes Maritimes, I gathered some spikes of *S. longipetala* in the hope of finding a bee in one of them. I noticed a bee in one of the flowers, and put the flower in a glass-lidded box without disturbing the bee. Next morning it was still in the flower, so I drew apart the sepals with my forceps to examine him. Slowly and reluctantly he began to move, stretched himself, and becoming more wide awake, suddenly realised

the flower in *Serapias*, so different from that of all other genera in the tribe Ophrydeae, is not unconnected with this curious habit. The side lobes of the lip, instead of being spread out as in all other genera of the tribe, are curled up on each side to form a tube, which is covered and concealed by the firmly-welded sepals and petals. The lighter-coloured mid-lobe of the lip is free, and forms a platform for insects to alight on. The dark, blackish-red colour of the inrolled side-lobes renders any insect in the flower invisible from outside. *M. J. Godfrey, (Col.), Thorenc, France.*

ODONTIODA DAUNTLESS VAR. BLUE BIRD.

At the Royal Horticultural Society on June 29, Messrs. Armstrong and Brown, Tunbridge Wells, were given an Award of Merit for the handsome *Odontioda* now illustrated (Fig. 34), shown as Oda. Blue Bird, but which is a finely-formed and richly-coloured variety of their previously-recorded *Odontioda* Dauntless, raised between Oda. Coronation and Odm. Armstrongiae. The flowers are bright ruby-red of varying shades, a few white lines appearing between the blotches. In crossing with *Odontoglossum* the desired red of the original ancestor, *Cochlioda Noezliana*, is sometimes lost, but in this hybrid it adds to the depth of the tint.

REPORT ON THE CONDITION OF THE OUT-DOOR FRUIT CROPS.

[FROM OUR OWN CORRESPONDENTS.]

THE WORDS "AVERAGE," "OVER," OR "UNDER," AS THE CASE MAY BE, INDICATE THE AMOUNT OF THE CROP; AND "GOOD," "VERY GOOD," OR "BAD," DENOTE THE QUALITY.

FULLER COMMENTS WILL BE GIVEN IN THE FOLLOWING NUMBERS. SEE ALSO LEADING ARTICLE ON PAGE 65.

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAW-BERRIES.	NUTS.	NAME AND ADDRESS.
SCOTLAND										
O, SCOTLAND, N.										
ELGIN	Under; good	Under; bad	Under; good	Under; good	Under; bad	Under; bad	Average; good	Under; good	....	John Macpherson, 4, Hawthorn Road, Elgin.
SUTHERLAND	Average good	Under	Under	Average	....	....	Average	Average	....	W. Game, Dnrobin Gardens Dnrobin, Golspie.
I, Scotland, E.										
ABERDEENSHIRE	Under	Under	Average	Under; bad	....	....	Average; good	Under; bad	....	Simon Campbell, Fyvie Castle, Fyvie.
	Under; bad	Under; good	Under; bad	Under; good	....	....	Average; good	Average; good	....	James Grant, Rothienorman Gardens.
	Under; good	Under; good	Under; good	Under; bad	Average; very good	....	Average; good	Average; good	....	John McKinnon, Haddo House Gardens.
BANFFSHIRE	Average	Under; bad	Under	Average; good	....	....	Over; good	Average; good	....	George Edwards, Ballindalloch Castle Gardens.
	Average;	Under	average;	Under	....	....	Over; very good	Under	....	James Jamieson, Easter Elchies, Craigellachie.
BERWICKSHIRE	Under; good	Under	Under	Under; good	Under	Average	Over; very good	Average; very good	....	William Clayton, Milne Graden Gardens, Coldstream.
	Under; good	Under; good	Under; very good	Average; very good	Under; good	Average; very good	Average; very good	Average; good	....	Peter Smith, The Gardens, Duns Castle, Duns.
CLACKMANNANSHIRE	Under; bad	Under	Under	Under	Under; bad	Under; bad	Under; bad	Under	....	Alex. Kirk, Consulting Gardener, Paton St., Alloa.
EAST LOTHIAN	Average; good	Average; good	Average; good	Average	Under	Over; good	Average; good	Over; good	....	R. P. Brotherston, Tynninghame Gardens.
FIFESHIRE	Under	Under	Under	Average	Under	Under	Average; good	Average	....	Chas. Simpson, Wemyss Castle Gardens, East Wemyss.
	Under	Under	Under	Average	Under	Under	Average; good	Average; good	....	D. McLean, Raith Gardens, Kirkcaldy.
	Under	Under	Under	Average	....	Under	Over; good	Average	....	William Henderson, Balbirnie Gardens, Markinch.
FORFARSHIRE	Under	Under	Under	Average; good	Under	Under	Average; good	Under; good	....	Robert Bell, Kinnaid Castle Gardens, Brechin.
	Under	Average	Average	Under	Average	....	Over	Over	....	J. B. Peppers, Panmure House Gardens, Carnoustie.
	Under	Under	Under	....	Under; good	....	Average; good	Average	....	Donald McInnes, Glamis Castle Gardens.
	Under	Average; good	Average	Average; very good	....	....	Average; good	Average;	....	David Boyle, Tay Park Gardens, Broughty Ferry.
	Under; bad	Under; bad	Under; bad	Average; good	....	....	Average; good	Average; good	Under	Andrew McAndie, Ruthven House Gardens, Meigle.
HADDINGTONSHIRE ..	Under; bad	Under; bad	Under; bad	Under; bad	....	Average; good	Average	Under	....	H. Nimmo, Broxmouth Park Gardens, Dunbar.
KINCARDINESHIRE ..	Average; good	Under; bad	Average; very good	Average; very good	Average; very good	....	Average; good	Under; good	....	William Thomson, Urie House Gardens, Stonehaven.
LINLITHGOWSHIRE ..	Under; good	Under; good	Under; bad	Under; good	Average; very good	Under; good	Average; very good	Under; good	....	John Highgate, Hopetoun Gardens, South Queensferry.
MIDLOTHIAN	Under	Under	Under	Average	....	....	Over; good	Over; good	....	William Crichton, Morton Hall Gardens, Liberton.
	Under	Under	Under	Under	....	Under	Average	Average	....	James Whytock, Dalkeith Gardens, Dalkeith.
PEEBLESHIRE	Under; good	Under; bad	Average; good	Under; bad	....	....	Average; good	Over; good	....	John Finnie, Stobo Castle Gardens, Stobo.
	Under	Under; bad	Average	Average	Over; very good	Average	Average; good	Over; very good	....	Alexander Black, The Glen Gardens, Innerleithen.
PERTSHIRE	Under; bad	Average; good	Under; bad	Under; good	Under; bad	....	Average; good	Average; good	....	John Chisholm, Melkicour House Gardens, Melkicour.
	Under	Under	Under; good	Average; good	....	Under	Under; good	Under; bad	....	Thomas Lunt, Keir Gardens, Dunblane.
	Under	Under	Average	Average; good	....	....	Average	Average; good	....	Chas. Crichton, Jordanstone Gardens, Meigle.
	Under; good	Under; bad	Average; good	Average; good	Under; bad	....	Average; good	Under; bad	....	Malcolm Macnaughton, Scone Palace Gardens.
	Under	Average	Average	Under	Under	Average	Average	Over; very good	....	J. R. McKiddie, Rossie Priory Gardens, Lochture.
6, Scotland, W.										
RGYLLSHIRE	Average;	Under	Average	Under	....	....	Average	Average	Under	Henry Scott, Torloisk Gardens by Aros, Isle of Mull.
	Under; bad	Under; bad	Average	Under	Under	....	Average; good	Average; good	....	D. S. Melville, Poltalloch Gardens, Kilmartin.
AYRSHIRE	Under; bad	Under; bad	Under; bad	Under; very good	Under; bad	Under; bad	Under; very good	Average; very good	Under; bad	D. Buchanan, Bargany Gardens, Dailly.
	Average	Average	Over	Under	....	....	Average	Average	....	John McInnes, Kirkmichael Ho. Gardens, by Maybole.
BUTESHIRE	Under; bad	Under; bad	Under; bad	....	....	....	Average; bad	Under; bad	....	John J. Davidson, Ardencraig Gardens, Rothesay.
DUMBARTONSHIRE ..	Under; bad	Under; good	Under	Under; good	....	....	Average; good	Average; good	....	John Brown, Cairndhu, Helensburgh.
DUMFRIESSHIRE	Under	....	Under	Under	....	....	Over; good	Average; good	....	John Urquhart, Hoddam Castle Gardens, Ecclefechan.
	Under; good	Under	Under	Under	....	....	Over; good	Under; good	....	James McDonald, Dryfeholme Gardens, Lockerbie.

CONDITION OF THE FRUIT CROPS—(continued).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NEC- TARINES.	APRICOTS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
6. Scotland, W.										
LANARKSHIRE	Average	....	Under	Under	....	....	Average ; good	Average	....	John Shiells, Bellefield Gardens
STIRLINGSHIRE	Under	Under	Under	Under	Under	Under	Average ; good	Average ; bad	Under	James W. Cunningham, Duntreath Castle Gdns. Blanehead.
WIGTONSHIRE	Under; bad	Under; bad	Under; bad	Under; bad	....	....	Average ; good	Under; bad	....	John Bryden, Dunragit Gardens Dunragit.
ENGLAND:										
2. England, N.E.										
DURHAM.....	....	....	....	....	....	Under	Under	Average	....	E. Tindale, Ravensworth Gardens, Gateshead.
NORTHUMBERLAND	Under	Under	Under	....	....	....	Average	Under	Average	Jas. Winder, Howden Dene Gardens, Corbridge-on-Tyne.
YORKSHIRE	Under; good	Under; good	Under; good	Under; good	Under; good	Under; good	Average ; very good	Over ; very good	Under	Jas. E. Hathaway, Baldersby Park Gardens, Thirsk.
	Under ; very good	Under ; bad	Under ; bad	Under ; bad	....	....	Over ; very good	Average	Average	Sidney Legg, Warter Priory Gardens, Pocklington.
3. England, E.										
CAMBRIDGESHIRE ..	Under; good	Under	Under; good	Under	Under; good	Under; good	Over ; good	Average ; good	Under	Arthur Sewell, Bartoo Road, Ely.
	Under; good	Under; bad	Average ; good	Under; bad	Average ; good	....	Over ; very good	Average ; good	....	T. Spooner, Meldreth.
	Under; good	Average ; good	Over	Under	Over ; very good	Average	Over ; very good	Over ; very good	Average	W. Woods, Clippenham Park Gardens, Ely.
ESSEX	Under; bad	Average ; good	Average ; good	Average ; good	Under; good	Average ; good	Average ; good	Under; bad	Average ;	Arthur Bullock, Copped Hall Gardens, Epping.
	Under; bad	Under; good	Average	Under	Average ; good	Over; good	Average ; very good	Average ; good	Under; bad	Charles A. Heath, Gt. Hallingbury Place, Bishops Stortford.
	Under; good	Under	Average ; good	Over; good	Average ; good	Average ; good	Over; good	Over ; very good	Under; good	Edwin Guile, Shortgrove, Newport.
	Under; good	Under; good	Average ; good	Under; bad	Average ; good	Average ; good	Over ; very good	Average ; good	Under; bad	C. Wakely, Conny Gardens, Chelmsford.
	Under; good	Under; good	Under; good	Under; bad	Under; good	Under; good	Over ; very good	Average ; very good	Under	William Johnson, Stansted Hall Gardens, Stansted.
HUNTINGDONSHIRE ..	Under	Under	Under	Average	Under	Under	Over; good	Over; good	Average	James Hewitt, Castle Gardens, Kimbolton.
	Under	Under	Average	Average	Average	Average ; good	Under	Average ; good	Average	A. V. Coombe, Ramsey Abbey Gardens.
LINCOLNSHIRE	Under; good	Under; good	Under; good	Under; bad	Under; bad	....	Average ; good	Over; good	....	Thomas Cox, Hainton Hall Gardens, Lincoln.
	Under	Under	Average	Under	Average ; good	Under	Over; good	Average	Under	F. J. Foster, Grimsthorpe Castle Gardens, Bourne.
	Under; good	Under; good	Under	Under	Average ;	Under	Over ; very good	Average	....	F. C. Stainsby, Brookesby Park Gardens.
	Under	Under	Under	Under	Under	Under	Average ; good	Under	Under	R. Monro, Somerby Hall, Somerby, Oakham.
	Under	Under	Under	Under	Average	Under	Average ;	Over; good	....	J. F. Vinden, Harlaxton Manor Gardens, Grantham.
NORFOLK	Under; good	Under; good	Under; good	Average ; good	Average ; good	Average ; good	Average ; good	Under; good	Under; good	C. Nichols, The Manor House Gardens, Ormesby St. Margaret, Gt. Yarmouth.
	Under	Under	Under	Under	Over ; very good	....	Over ; very good	Average ; good	....	H. Naylor, The Pleasaunce Gardens, Overstrand.
	Under; good	Under; bad	Average ; good	Under	Under; bad	Average	Average ; very good	Average	Average	Isalah Johnson, Catton House Gardens, Norwich.
SUFFOLK	Under	Under	Average ; good	Average ; good	Under	Under	Average ; very good	Average ; good	Over	E. Matthews, Lunwades Hall Gardens, Kennett.
	Under; bad	Under; good	Average ; good	Under; good	Average ; good	Under; good	Over ; very good	Average ; very good	Under	Arthur Turner, Orwell Park Gardens, Ipswich.
	Under; good	Under; good	Average ; very good	Under	Under	Under; bad	Average ; good	Average ; good	Under	H. Coster, Ickworth Gardens, Bury St. Edmunds.
	Under	Under	Under	Under	....	....	Average	Under	Under	E. G. Creech, Shire Hall Gardens, Bury St. Edmunds.
	verage good	Average ; good	Over; good	Average	Under	Under	Over ; very good	Over ; very good	Average	James Hilson, Flittoo Hall Gardens, Bungay.
4. Midland Counties.										
BEDFORDSHIRE	Under; good	Under	Under; good	Under; bad	Average	Under; bad	Average ; good	Under	Under; bad	Wm. F. Palmer, Froxfield Gardens, Woburn.
	Under; bad	Under; bad	Average ; good	Under; good	....	....	Over; good	Average ; good	Under	Chas. Turner, Amphil Park Gardens, Amphil.

CONDITION OF THE FRUIT CROPS—(continued).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAW-BERRIES.	NUTS.	NAME AND ADDRESS.
BUCKS	Under; bad Under Under; good Under; bad Under Under Under Under; good	Under; bad Under; bad Under; good Under; bad Under Under Under Under; bad	Under; good Under Under; good Under; bad Average Under; bad Under; bad Average; very good	Under; good Average; good Under; bad Under; good Under Under Under; bad	Under; bad Average Average; very good Average Average; good Average Under	Under; bad Under; bad Average; bad Under Under Under; good	Average; good Average; good Average; very good Average; good Average Average Average Average; very good	Under; good Average; good Over; very good Under Average; good Average; very good Average Under Average; good	Average; good Under Under; bad Under Average Under Under	W. Hedley Warren, Aston Clinton Gardens, Tring. Geo. Taylor, Bulstrode Gardens Gerrards Cross. Wm. Camm, Cliveden Gardens Taplow. James Wood, Hedsor Park Gardens, Bourne End. William Brooks, Abbey Gardens, Great Missenden. James MacGregor, Meotmore Gardens, Leighton Buzzard. Philip Mann, Education Sub. Office, Aylesbury. Chas. Page, Dropmore Gardens, Maidenhead. Wm. Turnham, Greenlands Gardens, Henley-on-Thames. G. F. Johnson, Waddesdon Gardens, or, Aylesbury.
CHESHIRE	Under; bad Under Under; bad Under Under; bad Under Under; bad	Under; good Under Under Under Under Under; bad	Under; bad Under Under Under Under; bad Under Average	.... Under Under Under Under Under Under	.... Under Average Average; good .... ....	.... Under Under Under; bad Under Average; good	Average; good Average Average Average; good Over; very good	Average; good Average Average Average; very good Over; good	.... Under Average Under Under Under Under	Alfred N. Jones, Marbury Hall Gardens, Northwich. Philip Bolt, Manor House Gardens, Middlewich. F. J. Cumberley, Tatton Park Gardens, Knutsford. Jas. B. Allan, Tirley Gardens, Tarporley. Jas. Atkinson, Torkington Lodge Gardens, Hazel Grove, Nr. Stockport. N. F. Barnes, Eaton Gardens, Chester. E. Severn, Combermere Gardens, Whitechurch.
DERBYSHIRE	Under; good Under Under Under; good	Under; good Under Under Under; bad	Average; bad Under; bad Under Under; bad Under; bad Under; good	.... Under; bad Under; good	.... .... .... .... .... Under; good	.... Under Under; bad	Average; good Average; bad Under; bad Average; good	Under; good Average; bad Under; bad Average; good	.... .... Under; bad	F. G. Mills, Glossop Hall Gardens, Glossop. John Maxfield, Darley Abbey Gardens. E. Wilson, Hardwick Hall Gardens, Chesterfield. J. Tully, Osmaston Manor Gardens, Ashbourne.
HERTFORDSHIRE	Under; good Under Average; under Average; good Under; bad Under; good	Under; good Under Under Under Under Under; bad Under; good	Under; good Under; good Under; bad Under Under; good Under; good Under; good	Under; bad Under; good Under Under; good Under; good Under; good	Under; bad Average; good Under; bad Average; very good Average; good	Under; bad Under; good Under; good	Average; very good Over; very good Average; good Over; good Average; good	Over; very good Over; very good Average; good Over; good Under; good	Under Average; good Average Average Under; good	William Fulford, Delrow House Gardens, Aldenham, nr. Watford. T. J. Hartless, Kings Waldenbury, Hitchin. Thomas Nutting, Childwickbury Gardens, St. Albans. James A. Paice, Aldenham Vicarage Gardens, Watford. Edwin Beckett, Aldenham House Gardens, Elstree. E. F. Hazelton, North Mymms Gardens, Hatfield.
LEICESTERSHIRE	Under Under Under; bad Under; very good	Under Under Under; bad Under; very good	Under Under Under; good Under; very good	Under Under; very good	Average Average Average; very good ....	.... Under Under; good	Over; good Average Average; good Average; very good	Average; Average Average; good Under; very good	.... Under Under; good Under; very good	W. Coe, Prestwold Hall Gardens, Loughborough. F. Ibbotson, Rolleston Hall Gardens, Billston, Leicester. A. H. Campin, Whetstone Pastures Gardens, Leicester. W. Paterson, Swithland Hall Gardens, Loughborough.
NORTHAMPTONSHIRE	Under; bad Under; bad Under; bad	Under; bad Under; bad Under; bad	Under; bad Over; good Under; bad	Under Average; good Under; good	.... Under; good ....	.... Under; good Under; good	Average; good Over; very good Average; good	Average Over; very good Average; good	Under; bad Under; good Under	Alfred Child, Catesby House Gardens, nr. Daventry. F. W. Gallop, Lilford Gardens, Peterborough. Robert Johnston, Wakefield Lodge Gardens, Stony Stratford.
NOTTINGHAMSHIRE	Average; good Average Under; good	Under; good Under; bad Under; good	Under; bad Under Under; bad	Under Under; bad	Average .... ....	.... Average; good	Average; Average Average; good	Average Over; good Average; good	Under Under	S. Barker, Clumber Gardens, Worksop. James Gibson, Welbeck, Worksop. Thomas Simpson, Newstead Abbey Gardens, Nottingham.
OXFORDSHIRE ..	Under; very good Under; bad Under; good Under; bad Under Under; good	Under; very good Average; good Under; good Under Under; good	Under; very good Under; good Under; good Under; good Under; good	Under; bad Under; good Under; bad Under; bad Under; bad Over; very good	Average; very good Under; bad Under; good Average Over; very good	Under; bad Over; good Over; good Under Over; good	Average; good Over; good Over; good Average; good Average; good	Under; very good Over; good Average Average; good Average; very good	.... Over Average; good Over Average Average	T. W. Whiting, Shotover Park Gardens, Wheatley. E. C. Kins, Blenheim Gardens, Woodstock. C. E. Munday, Nuneham Park Gardens, nr. Oxford. Ben Campbell, Cornbury Park Gardens, Charlbury. Frank J. Clark, Aston Rowant House Gardens, Wallingford. J. A. Hall, Shiplake Court Gardens, Henley-on-Thames.

CONDITION OF THE FRUIT CROPS—(continued).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES and NEC- TARINES.	APRICOTS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
STAFFORDSHIRE ..	Under; bad Under; bad Under; bad Under; good	Under; bad Under; bad Under; bad Under; good	Under; bad Under; bad Under; bad Under; bad	Under; good Under; good Average Under; bad	Under; bad Under; bad Average; good	.... Under; bad Under; bad Under; bad	Average; good Average; good Average Over; very good	Average; good Average; good Under Under	Under Under; bad Under	H. Collier, Rolleston Hall Gardens, Burton-on-Trent. Thomas Bannerman, Blithfield Gardens, Rugeley. Edwin Gilman, Ingestre Gardens, Stafford. A. Cheney, Shenstone Court Gardens, nr. Lichfield.
WARWICK	Under Under; good Under Under; bad Under	Under Under; good Under Under; bad Under	Under Under; bad Under Under; good Under; good	Under Under; good Under Under; bad Average	Average Average; bad Average; good Under Under	Under Under; good Under; bad Under	Over Over; good Average Average; good Average; good	Over Over; good Under; bad Average Average	.... Under; good Average Under Average Under	H. Dunkin, Mount Pleasant Gardens, Emscote. W. Harman, Newnham Paddox Gardens, Lutterworth. B. H. Martin, Moreton Paddox Gardens. Chas. Harding, Ragley Gardens, Alcester. Burton Oaiger, Wellsbourne House Gardens. H. F. Smale, Warwick Castle Gardens.
5. England. S. BERKSHIRE	Under; good Under Under; bad Under; good Under	Under; good Under Under Under; bad Under	Average; good Average; good Average Under; good Under	Under; good Under Under Under; bad Under	Under; good Average Average; good Under	Under; good Under Under Under; bad Under	Average; very good Over; good Average Over; good Average	Under; bad Over; good Under; bad Average; bad Average	Under; good Under Average; good Under; bad Average	A. B. Wadds, Englefield Gardens, Reading. Edw. Harriss, Lockinge Gardens, Wantage. J. Minty, Oakley Court Gardens, Windsor. Geoffrey Cooper, Radworth, Malvern Road, Furze Platt, Maidenhead. J. Howard, Benham Valence Gardens, Newbury. Thomas Wilson, Castle Gardens Wallingford.
DORSETSHIRE	Under; good Under; very bad Under; bad	Under; good Average Under; good	Average; good Under Average; good	Under; bad Under Under; bad	Average; good Under Under; bad	Under; bad Under Under; bad	Average; good Average; good Under; very good	Under; good Average; bad Average; good	Average Average Under; bad	Thos. Denny, Down House Gardens, Blandford. T. Turtton, Castle Gardens Sherborne. W. E. Axford, St. Giles Gardens, Salisbury.
HAMPSHIRE	Under; good Under	Average; good Average	Over; good Over	Average; bad Under	.... Under	Average; good	Average; bad Over	Average; good Average	Average Over	A. W. Blake, The Castle Gardens Highclere, Newbury. E. Molyneux, Swanmore Park, Bishop's Waltham.
KENT	Under; bad Under; bad Under Under Under; good Under; good	Under; bad Under Under Average Under	Under; bad Average Over Average Average	Under; bad Under Under Under	.... Over; good Average Over; very good	.... .... .... Average Under; good	Average; good Over; good Over Over; good Over; good	Average; good Average Under Average Over; good	Under; bad Average; good Under Average Average; good	Geo. Lockyer, Mereworth Gardens, Maidstone. Edward A. Bunyard, Allington, Maidstone. J. George Woodward, Barham Court, Teston, Maidstone. Charles E. Shea, The Elms, Fools Cray. J. T. Shann, Belteshanger Park Gardens, Easby, Deal. William Lewis, Iden Manor Gardens, Staplehurst. J. G. Weston, Eastwell Park Gardens, Ashford.
MIDDLESEX	Under; good Under Under; very good	Average; good Under Under; very good	.... Under; bad Average; very good	Average; good Average; good Average; good	.... Average ....	.... .... Under	Average; very good Average Average; good	Under; bad Average Under; bad	.... Average	W. Swan, Jannagar House Gardens, Staines. H. Markham, Wrotham Park Gardens, Barnet. G. H. Head, Fulwell Park Gardens, Twickenham.
SURREY	Under Under; bad Under; good Under; good Under; good Average; good Under; bad Average; good	Average Under; good Average; good Under; good Under; good Under Under; good Under; bad	Average Under; good Average; good Over; very good Average; good Average Average; very good Under; good	Under Under Under; bad Average; good Under Under; good Under; bad	Average Under Under Average; very good Under Average; good	Under Under Under Under Under	Average; good Average; good Average; good Average; good Over; good Over Over; very good Under; good	Average Average; good Under; good Under; bad Average Under Average; good Average; good	Average; good Under Average; good Average; good Average; good Average Over; very good Over; very good	J. Collier, Gatton Park Gardens, Reigate. James Lock, Oatlands Lodge Gardens, Weybridge. James Watt, Mynthurst Gardens, Reigate. T. Guile, Grenehurst Park Gardens, nr. Dorking. F. Jordan, Ford Manor Gardens, Lingfield. S. T. Wright, Royal Horticultural Gardens, Weybridge. T. Smith, Coombe Court Gardens, Kington-on-Thames. T. W. Birkinshaw, The Gardens, Coverwood, Ewhurst, Guildford
SUSSEX	Average; good Under; bad	Under; good Under; bad	Average; good Average; good	Under Under; good	Average; good ....	.... ....	Average; good Over; good	Under; good Over; good	Under Under	H. Cook, The Gardens, Glynde Place, Lewes. Ernest M. Bear, Magham Down Hailsham.

CONDITION OF THE FRUIT CROPS—(continued.)

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES. AND NEC- TARINES.	APRICOTS	SMALL FRUITS.	STRAW- BERRIES.	NUTS	NAME AND ADDRESS.
SUSSEX	Under	Under	Average	Under	....	....	Average	Average	Average	Lea Squibbs, Stoneburst Gar- dens, Ardingly.
(Continued)	Under; bad	Average	Average	Under; bad	Average; good	Under	Average; good	Under	Average	Arthur Wilson, Eridge Castle Gardens, Tunbridge Wells.
	Average; good	Under; good	Over; very good	Under	Average; good	Under; bad	Over; good	Over; good	Over; good	Ernest Markham, Gravetye Manor Gardens, East Grin- stead.
	Under; bad	Under	Average	Under; bad	Under	Under	Average; good	Average; good	....	W. H. Smith, West Dean Park Gardens, Chichester.
	Average; good	Average; good	Average; very good	Under	....	....	Average; very good	Under	Average	Edwin Neal, Tilgate Gardens, Crawley.
	Under; good	Under; good	Average; good	Under	Average; good	Over; good	Average; good	Average; good	Under	J. W. Buckingham, Milland Place, Liphook.
	Under; bad	Under; good	Under; good	Under; bad	Average; good	Under; bad	Average; very good	Average; very good	....	J. J. Thompson, Compton Place Gardens, Eastbourne.
WILTSHIRE	Under; bad	Under; good	Average; good	Average; good	Average; good	....	Average; very good	Over; very good	Over; very good	C. E. Barter, Longleat Gardens, Warminster.
	Under; good	Under; good	Under; good	Average; good	Average; good	Average; very good	Average; good	Average; good	Under; bad	James Glashen, The Manor Gardens, Ramsbury.
	Under	Under	Under	Under	Average	....	Average	Under	....	T. Sharp, Westbury.
	Under; bad	Under; bad	Under; bad	Under	Under	Under	Over; good	Average; bad	Average	T. Challis, Herbert Cottage, Wilton, nr. Salisbury.
7. England, N.W.										
CUMBERLAND	Under; good	Under; good	Under; good	Under; bad	Under; good	Under; bad	Over; very good	Over; very good	....	James Tait, Justicetown Gar- dens, Carlisle.
	Under	Under	Under	Under	Average	Under	Average	Average	Under	J. Gowan, Castle Gardeas, Whitehaven.
LANCASHIRE	Under; good	Under; very bad	....	....	....	....	Under; good	Under; good	....	W. B. Upjohn, Hall Gardens, Worsley, Manchester.
	Average	Under	Under	Under	Under	Under	Under	Average; good	Average	Richard F. Lambe, Witherslack Hall Gardens, Orange-over- Sands.
WESTMORLAND	Under; good	Under	Under	Under	....	....	Under; good	Under; very good	....	W. A. Miller, Underley Gardens, Kirkby Lonsdale.
	Under	Under	Under	Average	Average	Under	Average	Average	....	James Jeffrey, Lowther Castle, Penrith.
8. England, S.W.										
CORNWALL	Under	Under	Under	....	Average	....	Over	Under	....	Harry Williams, Tolvean, Redruth.
DEVONSHIRE	Average; good	Average; good	Under; good	Average; good	Average; bad	Under; good	Over; very good	Average; bad	Over; good	E. E. Bristow, Castle Hill Gar- dens, South Molton.
	Under; bad	Average; good	Average; bad	Under; bad	Average; bad	Under; bad	Average; good	Average; good	....	T. H. Bolton, Powderham Castle Gardens, nr. Exeter.
	Under	Under	Under	Under	Under	....	Average	Under	....	Gilbert Sleep, Hartland Abbey Gardens, Hartland.
	Under	Under	Under	Under	Under	Under	Average	Average	Average	P. C. M. Veitch, Royal Nurseries, Exeter.
	Under; good	Under; good	Under; good	Average; good	Under; good	....	Average; good	Under; bad	....	Wm. Lock, Eastcliffe Gardens, Teignmouth.
GLOUCESTERSHIRE ..	Under	Under	Average	Under	Average	Under	Average; good	Average; bad	Under	Arthur Chapman, Westonbirt Gardens, Tetbury.
	Under	Under	Under	Under	....	....	Average	Under	....	Wm. J. Jeffries, Cirencester.
	Under	Under	Under	Under	Average	Under	Average	Average	Average	John Banting, Tortworth Gar- dens, Faldfield.
	Under; good	Under; good	Under; good	Under	Under	Under	Average; good	Average; good	....	G. H. Hollingworth, Shire Hall, Gloucester.
	Under	Under	Average; good	Under	....	....	Under	Average; good	Average good	J. Osmond, Ebrington Hall Gardens, Campden.
HEREFORDSHIRE	Under; bad	Average	Under	Under; bad	Average	Under	Over; good	Under	Under	F. Roberts, Stoke Edith Park Gardens, Hereford.
	Under	Under	Under	....	....	Under	Under	Under	....	Dr. H. E. Durham, Dunelm Hereford.
	Under; very good	Under; good	Under; good	....	....	....	Under	Under	Over	Thomas Spencer, Goodrich Court Gardens, Ross.
MONMOUTHSHIRE	Under	Under	Under	Under	Under	Under	Average	Average	Over	T. Coomber, The Hendre Gardens.
WORCESTERSHIRE ..	Under; good	Under; fair	Under; fair	Average; good	Under	Under	Average; good	Under; fair	....	Thos. Watkins, The Craze Gardens, Claines.
	Under; bad	Under; bad	Under; bad	Under; bad	Average; good	Under; good	Average; good	Under; bad	Average; good	William Crump, Oakridge, Malvern Link.
	Under	Under	Average	....	....	....	Over; good	Under; good	Under	Ernest Avery, Finstall Park Gardens, Bromsgrove.
	Under	Under	Under	Under	....	Under	Over; good	Under	Under	James Udale, 7, Ombersley Road, Droitwich.
WALES.										
CARDIGANSHIRE	Under	Under	Under	Under	Under	....	Average; good	Under	....	W. Phillips, Derry Ormond Gardens, Llangybi.
CARNARVONSHIRE ..	Under; bad	Under; bad	Under; bad	Under; bad	Under; bad	Under; bad	Average; good	Average; good	....	J. S. Higgins, Glynllivon Park Gardens, Llanwnda.
DENBIGHSHIRE	Under	Under	Under	Under	Average	Average	Average	Under; bad	Average	J. A. Jones, Chirk Castle Gar- dens, Chirk.
	Under	Under	Under	Under	Under	Under	Average	Under	....	P. C. Puddle, Bodnant Hall Gardens, Tal-y-cain.
GLAMORGANSHIRE ..	Under	Under	Under	Under	Under	....	Average	Average	....	C. T. Warmington, Penllergaer Gardens, Swansea.

CONDITION OF THE FRUIT CROPS—(continued).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NEC- TARINES.	APRICOTS.	SMALL FRUITS.	STRAW- BERRIES.	NUTS.	NAME AND ADDRESS.
PEMBROKESHIRE	Under Under; good	Under; good Under; good	Under Under; bad	Under	Average; good Over; very good	Average; good	Over; good Over; very good	Over; good Over; good	Under	Chas. McInroy Stackpole Gardens Pembroke. Thomas Hy. Roberts, Slebeck Park Gardens.
IRELAND :										
9, IRELAND, N.										
CO. LEITRIM	Under	Under	Under	Under	....	....	Average; very good	Average; very good	....	Duncan McGregor, Derrycarne Gardens, Dromod.
6, IRELAND, N.										
MEATH	Under	Under	Under; bad	Under	....	....	Average	Under; bad	....	Michael McKeown, Julianstown, Drogheda.
MONAGHAN	Under; bad	Under	Under	Average	....	....	Average; good	Under; good	....	James Hepburn, Dartrey Gar- dens, Cootemill, Co. Cavan.
TYRONE	Under	Under; good	Under	Under	....	....	Average; good	Average; good	....	Fred. W. Walker, Sion House Gardens, Sion Mills.
WEST MEATH	Under; good	Under; good	Under; bad	Under; bad	....	....	Average; very good	Over; good	Under	Wm. Allan, Pakenham Hall Gardens, Castlepollard.
10, IRELAND, S.										
CORK	Under Under; good	Under Under; good	Average; Under; bad	.... ....	.... ....	.... ....	Over Average; bad	Over Average; bad	.... ....	Maurice Colbert, Aghera Gar- dens, Conna. J. Dearnaby, 17, St. Patrick's Terrace, Magazine Road.
KILDARE	Under	Average	Under	Under	Under	Over	Average	Average	Under	Alexr. Black, Carton, Maynooth.
KING'S COUNTY	Under; good	Under; good	Under; good	Average; bad	Average; good	Under; bad	Average; very good	Average; good	Under; good	Edward Clarke, Claremount, Garry Castle, Banagher.
LIMERICK	Under; good	Under; bad	Under; bad	Under; bad	....	....	very good	Average; good	....	Harry Nixon, Rockbarton, Kil- mallock.
LONGFORD	Under; good	Under; good	Under; good	Under; good	....	....	Average; very good	Average; very good	....	A. J. Campbell, Castle Forbes Gardens, Newtown Forbes.
WATERFORD	Under	Under	Under	Under	Over	Under	Over; very good	Under	Under	D. Cromble, Curraghmore Gar- dens, Portlaw.
WICKLOW	Average; good	Under; bad	Under	Under; bad	Over; very good	Over; very good	Average; good	Average; good	....	Walter Bailey, Glenart Gardens, Arklow.
CHANNEL ISLANDS :										
JERSEY	Under; good	Under; good	Under; bad	Under; bad	Under; bad	Under; bad	Average; good	Average; good	....	Thomas Sharman, Imperial Nur- sery, St. Mark's Road, St. Heliers, Jersey.
ISLE OF MAN :										
DOUGLAS	Under; bad	Under; good	Under; bad	Under; bad	....	....	Under; bad	Under; bad	....	James Inglis, Peel Road Nursery Douglas.

SUMMARIES OF THE HARDY FRUIT CROPS

SCOTLAND.										IRELAND.									
Records.	Apples.	Pears.	Plums.	Cherries.	Peaches and Nec- tarines.	Apricots.	Small Fruits.	Straw- berries.	Nuts.	Records.	Apples.	Pears.	Plums.	Cherries.	Peaches and Nec- tarines.	Apricots.	Small Fruits.	Straw- berries.	Nuts.
Number of Records	42	40	42	40	20	17	42	42	4	Number of Records	13	13	13	11	4	4	13	13	4
Average	8	6	13	16	4	5	31	24	—	Average	1	1	1	1	1	1	10	8	—
Over	—	—	1	—	1	1	8	5	—	Over	—	—	—	—	1	1	3	1	—
Under	34	34	28	24	15	11	3	13	4	Under	12	12	12	9	1	1	—	3	4
ENGLAND.										CHANNEL ISLANDS.									
Number of Records	148	148	146	133	109	98	149	149	111	Number of Records	1	1	1	1	1	1	1	1	—
Average	12	18	46	22	61	15	93	77	42	Average	—	—	—	—	—	—	—	—	—
Over	—	—	8	2	5	4	45	23	10	Over	—	—	—	—	—	—	—	—	—
Under	135	130	92	109	43	79	11	49	59	Under	1	1	1	1	1	1	—	—	—
WALES.										ISLE OF MAN.									
Number of Records	7	7	7	6	7	4	7	7	2	Number of Records	1	1	1	1	—	—	1	1	—
Average	—	—	—	—	12	12	5	12	1	Average	—	—	—	—	—	—	—	—	—
Over	—	—	—	—	1	—	1	1	—	Over	—	—	—	—	—	—	—	—	—
Under	7	7	7	6	4	2	1	3	1	Under	1	1	1	1	—	—	1	1	—
GRAND SUMMARY, 1920.										SUMMARY OF 1919 FOR COMPARISON.									
Number of Records	212	210	210	192	141	124	213	213	121	Number of Records	254	250	249	240	168	136	243	248	133
Average	21	25	60	40	63	22	140	111	43	Average	116	109	85	141	84	14	107	107	68
Over	—	—	9	2	9	7	58	33	10	Over	83	25	34	28	8	1	12	54	9
Under	191	185	141	150	64	95	15	69	68	Under	55	116	130	71	76	121	15	87	56

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

A Good Strawberry for a Wet Season.—From correspondents in many parts of the country I learn the Strawberry crops were almost a failure. With me, this was the case with Royal Sovereign, but I found Giron's Late Prolific withstood the very wet conditions which prevailed throughout the Strawberry season and ripened a good average crop. It would be interesting to learn if other gardeners' experience coincides with the above, also if any other variety produced a satisfactory crop this season. *H. Wheeler, Wenvoe Castle Gardens.*

Sweet Peas at Castle Milk, Lockerbie.—Sweet Peas are always magnificently grown at Castle Milk, Lockerbie and Dumfriesshire seat of Sir Robert W. Buchanan Jardine, Bart. Mr. John Jeffrey, his gardener, takes a keen interest in these flowers, which are so valuable where large quantities of cut blooms are required, as at Castle Milk. In addition to the best of the older sorts, a selection of the novelties and newer varieties is always added for trial. This year the Sweet Peas at Castle Milk are splendid. They are grown on tall, strained wire supports, and are magnificent plants, so thinly planted as to secure strong growth and the finest flowers. One of the finest is Tea Rose, of great beauty and of a colour that reminds one of some of the exquisite flowers which give it the name and which are so difficult to describe. The flowers are of great size and substance. Hawmark Pink is lovely, and well deserves its reputation, the colour being superb. Jack Cornwall, V.C., while a very fine blue, has a tendency to lose colour in some places unless the weather is of the most favourable kind. Mrs. Arnold Hitchcock proves very good, and Mrs. Tom Jones is much admired. The President is very fine indeed, while Dobbie's Mauve and King Mauve leave little to be desired. The latter is, perhaps, the longer-stemmed. *Visitor.*

Leaf Curl on Peach Trees.—I was pleased and interested to read the note on this subject by Mr. H. Henderson on page 49, as his experience exactly coincides with my own. I believe this trouble is caused entirely by climatic conditions, and have always found that picking off the affected leaves immediately the trouble is seen, syringing the trees once or twice daily, and doing everything possible to promote healthy growth will prove that the trouble is not a serious one. Here we have many Peach trees on a west wall, and, fortunately, this season, we have not had the slightest trace of leaf curl, and the trees are fruiting remarkably well. When quite a lad, I had the good fortune to work under a very capable hardy fruit grower, and he then held the same opinion as I do to-day. This is further confirmed by the fact that one seldom, if ever, sees leaf curl affecting trees under glass. *E. Beckett, Aldenham House Gardens.*

Gentiana septemfida.—Many people have been puzzled, myself among them, to account for the use of "septemfida"—seven-cleft—as the specific name of this Gentian. Mr. Reginald Farrer writes of it as bearing "ten or five-cleft flowers," and, as a rule, the corolla has five main segments, alternating with an equal number of smaller ones, which are deeply divided into a number of thread-like teeth or tooth-like threads, adding much to the richness of the bloom. On a large clump here, which has occupied the same place in the border for very many years, I have never seen a flower with more than five main and five subsidiary corolla lobes; but among the seedlings raised from it some of them produce among the ordinary five-ten corollas blossoms with seven main segments, and as many subsidiary ones, the calyx, usually five-cleft, conforming with an equal number of lobes. But whereas there are also on the same plants flowers with six main and six subsidiary segments of the corolla, and a like number of calyx lobes, I cannot but think that the five-ten arrangement is normal, and that "septemfida" is a misleading misnomer. *Herbert Maxwell, Monreith.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JULY 13.—*Present:* Messrs. E. A. Bowles (in the chair), H. J. Page, J. W. Odell, W. Hales, J. Fraser, Col. Rawson and F. J. Chittenden (hon. sec.).

Various Fruits.—Mr. BOWLES showed fruit of *Erodium gruinum* to illustrate the action of the awn in burying the seed. He also showed fruit of *Viburnum fragrans*, now fruiting in his garden. Mr. Farrer had reported the fruit of this shrub to be edible, but it is very small.

White-fruited Elder.—Mr. FRASER showed examples of the white-fruited form of the common Elder, which he had found growing wild near Ashted Common, Surrey.

Hybrid Lily.—Mr. DYKES showed a hybrid between *Lilium speciosum* × (*L. sulphureum* × *L. regale*). The flower as shown had no particularly remarkable characteristics.

Leaf Division at Will.—Col. RAWSON showed a *Tropaeolum tuberosum* stem, the leaves of which, he stated, had been divided at will by selective screening, thus repeating the experiment of a previous year. In addition, leaves which opened three-lobed had been made four-lobed within three days, and if two leaves developed at the same node they were not necessarily divided alike. He also showed petals of a Itugh Dickson Rose, whose change of colour to an indigo-crimson had been traced to the reduction in the water supply by a caterpillar living amongst them.

TRIALS OF PEAS AT WISLEY.

The following Awards to first Early Peas have been made by the Council of the Royal Horticultural Society after trial at Wisley. All the varieties were sown on March 3, and judged on June 11.

AWARDS OF MERIT.

No. 1, *Reading Wonder*, from Messrs. SUTTON AND SONS; No. 47, *Prosperity*, from Messrs. TOOGOOD AND SONS; No. 54, *Electricity*, from Messrs. COOPER, TABER AND CO.; Nos. 79 and 80, *Primo*, from Messrs. WATKINS AND SIMPSON and from Messrs. NUTTING AND SONS.

HIGHLY COMMENDED.—This award was made to:—No. 7, *Chelsea Gem*, sent by Messrs. SUTTON AND SONS; Nos. 23 and 30, *Little Marvel*, sent by Messrs. SUTTON AND SONS and Messrs. R. VEITCH AND SON; No. 35, *Prince Arthur*, sent by Messrs. SUTTON AND SONS; Nos. 44 and 45, *Superb*, sent by Messrs. NUTTING AND SONS and Messrs. TOOGOOD AND SONS; No. 50, *Harbinger*, sent by Mr. W. G. HOLMES; No. 59, *Skipper*, sent by Messrs. LAXTON BROTHERS; No. 62, *Earliest of All*, sent by Messrs. BARR AND SONS; No. 65, *Ringleader*, sent by Messrs. SUTTON AND SONS; No. 71, *Aviator*, sent by Messrs. LAXTON BROTHERS; No. 98, *Pilot Improved*, sent by Messrs. SUTTON AND SONS.

COMMENDED.—The following sorts were commended: No. 13, *Radium*, sent by Messrs. F. DICKS & CO.; No. 18, *Peter Pan*, sent by Messrs. R. VEITCH AND SON; Nos. 19, 20 and 21, *Marvellous*, sent by Messrs. SIMPSON, Mr. DAWKINS, and Messrs. KELWAY AND SON; No. 61, *Earliest of All*, sent by Messrs. KELWAY AND SON; Nos. 67, 68, and 69, *Eclipse*, sent by Messrs. SUTTON AND SONS, Messrs. NUTTING AND SONS, and Messrs. KELWAY AND SON; No. 85, *William I.*, sent by Messrs. BARR AND SONS; No. 86, *William I., Improved*, sent by Messrs. SUTTON AND SONS; Nos. 82 and 23, *Thos. Laxton*, sent by Messrs. BARR AND SONS and Messrs. NUTTING AND SON.

The following awards have been made to second early varieties, all of which were sown on March 3, 1920:—

AWARDS OF MERIT.

No. 59, *Skipper*, sent by Messrs. LAXTON BROS.; No. 71, *Aviator*, sent by Messrs. LAXTON BROS.; No. 72, *S. T. Wright*, sent by Messrs. LAXTON BROS.; Nos. 73 and 74, *Admiral Beatty*,

sent by Messrs. LAXTON BROS. and Messrs. NUTTING AND SON; and No. 114, *Duke of Albany*, sent by Messrs. SUTTON AND SONS.

HIGHLY COMMENDED.—No. 37, *Paragon*, sent by Mr. H. HAWKINS; No. 40, *Reading Market*, sent by Messrs. SUTTON AND SONS; Nos. 55 and 56, *King Edward*, sent by Messrs. SIMPSON and Messrs. SUTTON AND SONS; Nos. 82 and 83, *Thos. Laxton*, sent by Messrs. BARR AND SONS and Messrs. NUTTING AND SONS; No. 101, *Royal STANDARD*, sent from LANCASHIRE COUNTY COUNCIL FARM; and No. 112, *Edwin Beckett*, sent by Messrs. NUTTING AND SON.

COMMENDED.—Nos. 75, 76, and 77, *World's Record*, sent by Messrs. KELWAY AND SON, Messrs. SIMPSON and Messrs. SUTTON AND SONS; No. 88, *Bountiful*, sent by Messrs. SUTTON AND SONS; and No. 96, *Dora*, sent by Mr. T. LOWDER, King's Norton, Birmingham.

TRIAL OF ROUND-SEEDED SPINACH AT WISLEY.

The following awards have been made by the Council of the Royal Horticultural Society to round-seeded Spinach after trial at Wisley:—

FIRST-CLASS CERTIFICATE.

No. 27, *Triumph Improved*, sent by Messrs. BARR AND SONS.

AWARDS OF MERIT.

No. 6, *Victoria*, sent by Messrs. COOPER, TABER AND CO.; *Long Standing Round*, sent by Messrs. SUTTON AND SONS.

HIGHLY COMMENDED.—No. 30, *The Carter*, sent by Messrs. J. CARTER AND CO.

COMMENDED.—No. 12, *Viroflay*, sent by Messrs. R. VEITCH AND SON; No. 18, *Common Round*, or *Summer*, sent by Messrs. BARR AND SONS.

RICHMOND HORTICULTURAL AND ALLOTMENT HOLDERS.

JULY 28.—The 42nd exhibition of the Richmond Horticultural Society, with which the Richmond Allotment Holders' Association is now combined, was held in the Old Deer Park, Richmond, on a day that was one of the coldest and wettest in the dismal month of July. We regret that the Clerk of the Weather wept instead of smiling upon this effort to revive the glories of old-time Richmond shows, and we trust the financial loss will not be a disheartening one. The exhibition was a trifle disappointing, remembering the shows of 20 and 30 years ago, but it was a good one nevertheless, and dessert fruits, hardy flowers, groups and vegetables were the leading features. Lord Cave, the president, did his best to make the event a success; Lord Lambourne, the genial president of the Royal Horticultural Society, smiled on the proceedings and added words of encouragement; the committee, led by Mr. R. Hadden, did their part nobly before and at the show; and the secretaries, Mr. E. Skelton and Mr. J. Aikman, ordered all things admirably—except the weather. We would add that it is a very long time since we have seen class cards so legibly—we had almost said beautifully—inscribed with the names and addresses of competitors as on this occasion.

Considering the season, fruits were well shown. In the class for six dishes of fruits, C. HEFORTH, Esq. (gr. Mr. J. Lock), Oatlands Lodge, Weybridge, was the only competitor and was awarded the first prize for Foster's Seedling and Madresfield Court Grapes, a Queen Pineapple, Favourite Melon, Lord Napier Nectarines, and Crimson Galande Peaches, all in excellent condition. The same exhibitor won first prize for black Grapes with a pair of fine bunches of Madresfield Court, with large, highly coloured berries. He was also first prize-winner for white Grapes with Muscat of Alexandria; J. B. HILDITCH, Esq. (gr. Mr. W. Bunney), Asgill House, Richmond, gained a 3rd prize with the same variety.

C. HEFORTH, Esq., also won 1st prizes for (a) a dish of Peaches (Goshawk); and (b) a Melon (Favourite). J. E. SAYNOR, Esq. (gr. Mr. J. Read), Firroft, Ditton Road, Surbiton, had the best dish of Nectarines, showing finely

coloured examples of *Violette Hative*; C. HEPPORTH, Esq., 2nd, with Lord Napier. L. WARDE, Esq. (gr. Mr. A. Allum), Petersham House, Petersham, was awarded a 2nd prize in a class for six dishes of hardy fruits; he was the only exhibitor and showed two dishes each of Gooseberries, Apples and Plums.

Roses were not in good form, neither was the competition as keen as it was at Richmond a score of years ago. Mr. F. J. JEFFERIES, Thornton Heath, was the only exhibitor of twenty-four varieties, three blooms of each—a very poor set. He was also the only exhibitor of a dozen blooms of one variety and a dozen in two varieties, and was awarded 2nd and 1st prizes respectively.

By far the best set of Roses was found in the 1st prize stand of twenty-four blooms, distinct, exhibited by Mr. GULLIVER SPEIGHT, Market Harborough, whose best flowers were of George Dickson, Mamie, Joseph Hill, A. Hammond, Gladys Harkness and Coronation. Mr. SPEIGHT was also awarded 1st prize for a dozen blooms, distinct.

Mr. F. J. JEFFERIES led for a dozen bunches of garden Roses, and L. WARDE, Esq., for six bunches, each showing well. In other classes Mr. G. J. FAVET, Hampton Hill; Mr. A. CURTIS, Streatham; and Mr. L. MARTIN, Richmond were the chief prize winners.

Hardy flowers were a fine feature, although competition was poor. LIONEL WARDE, Esq., was the only exhibitor of twelve and of twenty-four bunches, and he deservedly gained 1st prize in each case. Some of his best bunches were of Gaillardias, *Alstroemerias*, *Pentstemon*, *Helonium pumilum*, *Achillea Eupatorium*, *Phloxes* and *Hyacinthus candicans*.

L. WARDE, Esq., showed the best half-dozen *Caladiums*, all well-grown plants, but other plants were poorly represented, and in some classes there were no entries.

In the open class for nine distinct kinds of vegetables the first prize was won by Col. BIDDULPH with a good set, which included Ideal Potatoes, Intermediate Carrots, Improved Reading Onions, Globe Beet and Sutton's Earliest Cabbages. Mr. J. DENTON, Lower Mortlake Road, Richmond, 2nd.

The premier award in the class provided by Messrs. Sutton and Sons was won by Col. BIDDULPH (gr. Mr. E. Montague), who had a good set of six distinct kinds of vegetables, his best specimens being those of Empress Potatoes, New Red Intermediate Carrots, Table Dainty Marrow and Improved Reading Onions; LADY P. STANHOPE-HANSON (gr. Mr. J. Shanks), The Grange, Wraybury, 2nd; and Mr. E. WATTS, Analee Road, Richmond, 3rd.

Mr. E. MOLE, Sandycroft Road, Richmond, led in the local class for eight kinds of vegetables, and showed capital Carrots, Onions, Runner Beans and Cauliflowers. For six kinds Mr. R. RAPER, Alexandra Road, Richmond, won first prize. Prominent prize-winners in other vegetable classes were Mr. R. KEEN, Manor Grove, Richmond; Mr. J. DENTON; Mr. E. MOLE; Sandycroft Road, Richmond; Mr. E. WATTS; and Mr. RAPER, the latter proving a most successful competitor and winning the special prizes for the best dish of Potatoes, the Courlander Cup offered to the winner of most first prizes, and the Toogood Championship prize offered for the highest points.

A few displays were provided by the trade. Messrs. J. CARTER AND Co. were represented by a large group of hardy flowers. Hollyhocks formed the centre of the group, then came a selection of *Phloxes*, while annuals in great variety, with *Violas* and *Antirrhinums* filled the remainder of the space (Large Gold Medal). Mr. E. J. FISHER showed *Violas* (Silver Medal). Mr. W. THOMPSON, Sheen Road Nurseries, contributed a group of handsome Palms set amid scarlet *Salvias*, *Plumbago capensis*, *Begonias*, *Pelargoniums*, *Polyantha* Roses in pots, and Ferns (Gold Medal). Mr. L. E. RUSSELL showed a very interesting group of ornamental foliage plants, notably *Codiaeums*, *Dracaenas*, *Aralias*, *Marantas*, *Caladiums*, *Acalyphas* and *Rex Begonias*, with a few *Gloxinias* and *Anthuriums* as marginal plants to a fine group (Large Gold Medal).

Obituary.

C. H. Broadhead.—We regret to learn of the death of Mr. C. H. Broadhead, of Messrs. S. Broadhead and Son, Wooldale Nurseries, Thongsbridge, Huddersfield, who passed away on Tuesday, the 27th ult., after an illness of 18 months. He will be remembered as an enthusiast in Alpines.

J. Charlesworth.—By the death of Mr. J. Charlesworth, of Messrs. Charlesworth and Co., Hayward's Heath, early on Monday, August 2, Orchid enthusiasts have sustained a great loss. For some time past Mr. Charlesworth had suffered from bronchial trouble and it was from a severe attack, followed by heart failure, that he succumbed in his 70th year. Although born in Bradford and brought up in the wool trade, he never liked the business and quite early in life he made a hobby of the cultivation of Orchids. He was very successful, chiefly because he brought a well-trained mind to bear upon all the problems which presented themselves, in addition to a love of plants. In due course he commenced business as an Orchid grower, importer and raiser at Heaton, Bradford. The business increased rapidly, necessitating the acquisition of a second nursery and the addition of many glass houses. Eventually, as further expansion became necessary, he sought a sunnier site and found it at Hayward's Heath. Here he created an establishment second to none and fitted in every way for the raising and cultivation of Orchids. Mr. Charlesworth was a clever raiser of Orchids and a large number of interesting and beautiful bigeneric hybrids remain as a record of his skill and patience. In all his work as a hybridist he had an end in view, and though he was not always successful his successes were numerous. If he had done nothing more than produce the fine race of *Odontoglossum crispum xanthotes*, his name would have been honoured in horticulture, but these pages have recorded other wonderful results of his skill during the past score of years. In the raising and cultivation of seedling Orchids, Mr. Charlesworth was recognised as a master hand; his methods were distinct and as certain as it is possible to be when so many conditions have to be considered. These methods were the outcome of long years of study in the laboratory and the propagating house and enabled him to raise Orchids about as easily as most people raise Cabbages. Mr. Charlesworth was always a generous supporter of horticultural activities and he encouraged Orchid cultivation by offering substantial prizes, his most notable donation being a £100 cup, offered for the best group of Orchids at the International Horticultural Exhibition, held at Chelsea in 1912. Mr. Charlesworth was a member of the Royal Horticultural Society's Orchid Committee, and his charm as a host will remain a pleasant memory to most members of that body.

TRADE NOTE.

OWING to the fact that the discussion on the reclassification of railway rates will not now be taken by the Rates Advisory Committee until about the middle of September, it should be noted that there is still time for any further suggestions to be made. These may prove to be of great assistance to those who will be giving evidence before the Committee. The Chamber of Horticulture points out that it does not appear to be realised that this may be the only opportunity for the next 25 or 30 years of bringing forward those acute grievances under which many have suffered since the last general classification in 1892.

ANSWERS TO CORRESPONDENTS.

ABSENCE OF COLOUR IN TOMATO FRUITS.

L. I. A. B. The unsatisfactory colour of the Tomato fruits is due to a lack of potash in the soil. Potash may be supplied as a top-dressing either in the form of wood-ash or sulphate of potash. The latter should be given

at the rate of $\frac{1}{2}$ ounce to the square yard and watered in, and similar applications should be made at intervals of about ten days until the fruits colour properly.

NAMES OF PLANTS: *G. H. R.* *Eriobotrya japonica*—The Loquat.—*H. B. O.* The specimens were very poor, and in many cases quite insufficient for determination. Those we can make out are as follows:—1, an *Anthurium*; probably a form of *A. Scherzerianum*; 2, *Eucharis* species; 3 and 11, varieties of *Begonia Rex*; 4, *Selaginella apoda*; 8, *Ceropegia Woodii*; 9, *Selaginella Kraussiana*.—*W. E. T.* : *Epipactis purpurata*.—*L. H.* : 1, *Arabis petrea*; 2, *Gnaphalium lanatum*; 3, *Buddleia variabilis Veitchii*.—*J. E. D.* : 1, *Bryonia dioica*; 2, *Solanum dulcamara*. (Both plants are poisonous and dangerous to cattle).—*J. H.* : 1, *Pyrus Aria* 2, *Crataegus cordata*.—*A. N.* : 1, *Pernettya mucronata*; 2, *Senecio Veitchianus*; 3, *Lonicera involucrata*; 4, *Sinomenium diversifolium*; 5, *Hypericum Hookerianum* (sometimes named *H. oblongifolium*); 6, *Gleditsia triacanthos* (Honey Locust); 7, *Pyrus pinatifida*; 8, *Spiraea sorbifolia*; 9, *Cupressus pisifera*, var. *squarrosa*; 10, *Spiraea japonica*; 11, *Prenanthes virgata*.—*E. B. H.* : 1, *Mesembryanthemum blandum*; 2, not recognised; 3, *Trachelium coeruleum*; 4, *Campanula lactiflora*.—*W. and S.* : *Infula Helenium*.—*E. M.* : *Rhus Cotinus*.—*C. C.* : 1, 2, 11, and 19, not recognised; 3, *Thalictrum aquilegifolium*; 4, *Sidalcea candida*; 5, *Lysimachia quadrifolia*; 6, *Lythrum salicaria*; 7, *Eriogonum fruticosum*; 8, *Polemonium coerulcum*; 9, *Polemonium coerulcum*; 10, *Senecio tanguticus*; 12, *Lilium* species (send when in flower); 13, *Dictamnus albus* var. *purpurea*; 14, *Funkia Fortunei*; 16, *Sidalcea spicata*; 17, *Salvia* species, probably *memorosa*; 18, *Alstroemeria aurantiaca*; 20, *Salvia Horminum*; 21, *Stachys grandiflora*; specimens unnumbered, *Astrantia major* and *Clematis recta* var.

ROSE LEAVES INJURED. *M. W. A.* The leaves received were disfigured by the Black spot disease. All diseased foliage should be burned. Plants that are attacked should be drenched with a solution of sulphate of copper at the rate of 2 ounces of sulphate to 3 gallons of water, in early spring before the buds expand. The soil around the plants should also be sprayed with this mixture.

SHOT-HOLE FUNGUS ON PEACH LEAVES. *A. C.* The disease causing the Peach leaves to fall and responsible for the holes on the leaves is the Shot-hole fungus (*Cercospora circumscissa*). All fallen leaves should be gathered and burnt and affected leaves on the tree should at once be removed. Bordeaux mixture is sometimes advised for spraying, but this is liable to injure the foliage of the tree, and it is therefore better to use a self-boiled lime and sulphur compound. Spraying operations should commence when the young leaves are expanding and be continued at brief intervals subsequently.

TOMATO LEAVES INJURED: *C.* A biting insect of some kind may have been the cause of the injury, but there were no specimens present to enable us to identify the pest; nor was there any fungous disease present on the leaves. If you make a careful examination of the plants both by day and night, you will probably discover the cause of the injury.

ZONAL PELARGONIUM SPORT: *G. H.* Most varieties of Zonal Pelargoniums are inclined to sport or vary in the colour of their flowers; indeed, many of the best varieties in commerce have originated as sports. The scarlet variety may at first have been a sport from the other, and so a simple case of reversion has occurred. On the contrary, the distinct flower may be a sport from the scarlet kind. The flowers were too faded to show their true character.

Communications Received.—*W. T. R. P. B.*—*J. A. P. C.* and *Co.*—*H. E. D.*—*M. C.*—*L. I.*—*A. G.*—*P. H.*—*E. M. B.*—*S. L.*—*T. R. C. W.*—*F. J.*—*C. C.*—*A. G.*—*S. L.*—*A. O.*—*J. C.*—*T. B.*—*E. M.*—*H. D.*

THE

Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61.8°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, Aug. 11, 10 a.m.; Bar. 30.3; temp. 66°. Weather—Dull.

Forestry by Precultures.

Mr. Henry Vendelmans, a Belgian agriculturist, advocates in an article entitled Forestry by Precultures*

the adoption of a system of preliminary forest tree cultivation before planting is undertaken. The system, which he recommends for application on land which is so poor that it is incapable of bearing crops, consists in first clearing the land and then ploughing, subsequent to a dressing of from $\frac{1}{2}$ to $1\frac{1}{2}$ ton of burnt lime where deciduous or lime-loving Conifers are to be planted, the depth of the plough to vary according to the nature of the land, from 8 in. to 14 in., or in the case of soil with a hard pan, ploughing or subsoiling. Where the soil is poor no cultivation is done in the first year, but artificials, for example, raw mineral phosphates or basic slag and potash, are spread and harrowed in. The first crop to be sown is yellow Lupins—1 cwt. of seed to the acre, and on poor land with a scant vegetation it is advisable to inoculate the land by spreading soil from a field which has grown yellow Lupins, at the rate of 4 loads to the acre. The yellow Lupin is a better green manure crop than the blue Lupin in that it stands drought better, grows quicker and yields a bulkier crop. In order to recover the cost of these preliminary operations a farm crop is taken after the Lupins have been ploughed in at their flowering time; the crop recommended being winter corn. In certain cases a second corn crop may be taken, and in that case a second sowing (broadcast) of yellow Lupins is made in the first corn crop so that it remains to be ploughed in subse-

quently to the cutting of the corn and before the first frosts. The taking of the corn crop is not allowed to interfere with the exploitation of the ground for forestry: for Firs or Spruces are planted with the corn from December onward. The seedling trees put in must, of course, be small, and they are planted by slitting by means of a spade; or in the case of trees which may be raised from seed and need no transplanting seed may be sown with the corn. By either means it is claimed that a year is saved. Mr. Vendelmans is enthusiastic in the advocacy of this method of preparing land for afforestation, of bringing it within the ambit of agriculture profit and of recovering the cost of preparation by one or more agricultural crops. He predicts that the introduction of the system will open a new era for forestry in many countries. It is, of course, self-evident that the principles underlying the proposed practice are sound and certainly the idea is attractive of making the corn crop pay for extra cost of preparation and thus providing the forest that is to be with a permanent endowment in the form of better soil conditions; but, foresters will require fuller data with respect to costs and returns before adopting the method on a large scale. The Editor of *The Quarterly Journal of Forestry*, in a footnote to Mr. Vendelman's article, expresses doubt as to whether in present circumstances of food shortage, it is desirable to plant trees on land which can be brought under agricultural cultivation; but we take it that there is a considerable area of land which could not profitably be brought under permanent agricultural cultivation but which might, nevertheless, be cultivated sufficiently to give an agricultural crop and at the same time be permanently improved to such an extent as to give a better chance of successful timber growing than would have been the case had it been used for afforestation purposes without any method of "preculture."

Antirrhinums at Wisley.—One of the most attractive displays to be found in the Royal Horticultural Society's Gardens at Wisley, Ripley, Surrey, is provided by the great trial of Antirrhinums. The plants are now at their best and visitors have an unusual opportunity of making notes of the heights and floral colours of the many varieties here brought together, whilst the display as a whole gives some idea of the value of Antirrhinums in the flower garden. Other features of interest at the present time at Wisley are the Herbaceous Borders, the Rock Garden, the Grapes in the large vinery, and the splendid crop of Apples in the fruit quarters on the high ground.

Death of the Raiser of Peasgood's Nonsuch Apple.—A Stamford newspaper has lately recorded the death of Mr. John Francis Peasgood, an old resident of Stamford, who recently died at Worthing in his 80th year. This was the Mr. Peasgood who introduced the famous Apple which bears his name. He kept a boot and shoe shop in High Street, Stamford, for some years, and left Stamford in 1874, eventually moving to Worthing in 1913. It appears from some notes in the *Stamford Mercury* that the Apple was really raised by Mr. Peasgood's wife, who sowed some Apple pips in her father's garden at Grantham; all the seedlings died except one, and this was removed to Stamford when she was married. Seven years afterwards it bore fruits; these were submitted to the late Mr. R. Gilbert, of Burghley, and the late Mr. Thos. Laxton, who was then at Stamford. On the advice of these experts the fruits were placed before the Fruit Committee of the Royal Horticultural Society on September 18, 1872. A First Class Certificate was awarded the variety on that date.

Hidalgo Wercklei at Kew.—Among the climbing plants flowering in No. 4 greenhouse at Kew, Hidalgo Wercklei is now the chief attraction. The brilliant, scarlet flowers resemble those of a small single Dahlia. When first introduced this climber excited a good deal of attention and was generally referred to as the climbing Dahlia. The general complaint against this plant is that it does not flower freely. This is certainly true when it is kept trimmed and trained in the ordinary way, but it should be planted in a position where it will receive plenty of light and may have plenty of room to grow without having to be trimmed. The Kew plant is planted out in a bed and the growths depend like a thick curtain of dark green from the rafters of the house, whilst the foliage is thickly starred with the brilliant flowers. The fine effect of the specimen is enhanced by a silvery mass of *Acacia cultriformis* just underneath. Hidalgo Wercklei was discovered by Mr. Carl Wercklei on a mountain in Costa Rica, and was distributed in 1898 by Mr. John Lewis Childs, New York, who named it *Childsia Wercklei*. The same year he sent a plant to Kew, which first flowered in 1899.

Sale of Mr. Dykes' Collection of Irises.—The announcement in our advertisement columns of the sale of the major part of the collection of Irises brought together at Godalming by Mr. W. R. Dykes is a matter of unusual interest to the many lovers of this beautiful family of plants. Mr. Dykes, the secretary of the Royal Horticultural Society, is moving from Godalming and taking up his residence nearer London. Unfortunately for him, he is unable to obtain a suitable garden wherein to grow his Iris collection, and consequently he is compelled to dispose of most of his plants; but he will retain the newer hybrids, and also his unflowered seedlings, and these will occupy considerable space. As Mr. Dykes is an authority on Irises it is to be hoped he will be able to continue the study of this genus and to raise new and beautiful hybrids and varieties.

British Florists' Federation.—The second number of *The Florists' Bulletin*, issued by the Committee of the British Florists' Federation, although quite distinct from its predecessor, is equally interesting. The Editorial notes indicate the work accomplished by the Federation during the present year and have special reference to the part played by it at the first exhibition of the Antwerp Fêtes, and at the meeting of the Federation Horticole Professionnelle Internationale held at Ghent. The report of the Committee for 1919 is published, and there are interesting articles dealing with the desirability of co-operation among florists and flower growers, and horticultural sundries. From the growers' point of view the most interesting contribution is that of Paonies for Cut Flowers, from Mr. G. W. Leak, of Messrs. R. H. Bath and Co., Wisbech. The issue concludes with a list of the names and addresses of members and the rules of the Federation.

Hot Water Treatment of Diseased Daffodil Bulbs.—An interesting demonstration, held under the auspices of the Spalding Bulb Growers' Association took place at the warehouse of Messrs. Geo. Munro, The Maltings, Spalding, on Tuesday the 3rd inst. By arrangement with Mr. J. K. Rambottom, N. D. Hort., the investigator of the eelworm disease of Daffodils, and Messrs. Charles Hearson and Company Ltd., London, scientific instrument manufacturers, an apparatus capable of soaking one and a half hundredweight of infected bulbs has been designed. The apparatus consists of two tanks, the inner or soaking tank for receiving the bulbs being perforated and fitted with a self-locking lid. The temperature is controlled by means of an automatic, patent thermostat and the heat may be applied by either gas, electricity or oil, so that growers who are situated away from a gas or electrical supply may utilise the hot water treatment. The apparatus on view was in perfect working order, and during the demonstration, which lasted more than an hour, the thermometer stood constantly at 110° F., and it was the opinion of the forty or so growers who were present that Messrs. Hearson and Co., had

* *The Quarterly Journal of Forestry*, XIV, July, 1920.

constructed an apparatus as nearly fool-proof as possible. The price of the apparatus, complete with all fittings, is £35, and it is gratifying to learn that the smaller grower is now in a position to fight the disease which at one time threatened the extinction of commercial Daffodil cultivation in this country. The hot water treatment has been applied successfully on a large scale on the farms of Messrs. J. T. White and Sons and Messrs. Geo. Monro, Spalding, and we understand that the Dutch growers are now adopting this form of treatment, which originated from the researches of a young British student. All communications respecting the supply of the hot water apparatus for dealing with diseased Daffodil bulbs may be obtained from Mr. J. K. Ramsbottom, c.o. Messrs. Geo. Monro, The Maltings, Spalding.

Hemlock Poisoning.—The very poisonous nature of Hemlock was disclosed at an inquest held at Wrexham a few days ago. Some school-boys camping on the banks of the River Dee, near Rossett, had used the stems of Hemlock as peashooters, and as a result one of them died of Hemlock poisoning.

R.H.S. War Relief Fund.—The large amount of assistance which the Committee of the R.H.S. War Relief Fund has been able to render in the devastated areas in France, Belgium and Serbia is not fully comprehended by those who contributed to the fund. It is with a view to emphasising the value of the relief given, that we publish the following letter received by Sir Harry J. Veitch (Treasurer of the Fund) from Mrs. K. E. Griffin, Directrice de Poste de Secours, La Bassee (Nord), France:—"It may interest the Committee of the Royal Horticultural Society to know how much their generous gifts of seeds and fruit trees have been appreciated in this devastated part of France. I distributed a large number of the packets which were sent to La Bassee, to people living in the outlying districts, who were most grateful for the gifts of the Society which have encouraged and enabled them to cultivate many a plot of land which would otherwise have lain waste. The seeds have yielded splendidly and vegetables are plentiful, thanks to the magnificent gift of the Royal Horticultural Society's War Relief Fund. As an Englishwoman I am delighted to see how much the gift has been appreciated and assure you of the gratitude of the people of La Bassee and those of the country districts."

An Open Space for Stepney.—If the efforts now being made by the Metropolitan Public Gardens Association are successful, one of the poorest and most crowded parts of the Borough of Stepney will have an open space. The Association has obtained an option to purchase Prince's Square, about three-quarters of an acre in extent. This space was formerly the churchyard and burial ground attached to the Swedish Church. The London County Council has promised a contribution of £2,500 towards the purchase price of £3,500; the Poulter Trust has promised £500, and the Metropolitan Public Gardens Association a similar sum. The Stepney Borough Council will undertake the management and maintenance of the square as a public open space, but there remains to be found a sum of £1,300 or £1,400 for legal expenses and putting the ground in order. The Association will be grateful for assistance in this connection.

Need for a National Rose Garden.—The many Rosarians who desire to see a National Rose Garden formed will be interested to learn that a writer in the July issue of *The Nineteenth Century*—W. Morris Colles—supports their views. He writes:—"It is an amazing reflection that the Rose as our national flower should have had so little national recognition. Many of our old English favourites have been lost to art and commerce already, and many more will soon follow them into the limbo of the has-beens. Few of us would care to see the garden follow the farm into the net of the Ministry of Agriculture. We have little reason to be enamoured of State management, and, fortunately perhaps,

little reason to fear it. But there must be Rose-lovers enough to make a National Rose Garden a practicable project. There is nothing new about the proposition. It has been advanced over and over again. It is appropriately put forward in the *Rose Annual* for 1920 as a suitable War Memorial. In any case the reproach that our growers should have to go to the Rosary of the municipality of Paris, La Bagatelle, or to those at Washington or Cornell, to get a hall-mark of trustworthiness for their novelties should, in common decency, be removed. If this established as the test, not merely the exhibition value of the individual bloom grown under exhibition conditions, but the true natural habit of the tree itself in its most perfect garden form, it would put the art of Rose culture on a rational as well as a national basis.

Flowers in Season.—We have received a few beautiful sprays of *Eucryphia pinnatifolia* and *Dierama pulcherrima pendula atropurpurea* from Mr. G. Reuthe, of the Fox Hill Nursery, Keston. Mr. Reuthe states that the former, a Chilean shrub, is a mass of flowers this year. The *Dierama*, with its pendulous spikes of flowers, quite 5 feet high, makes a very charming picture.

Children's Gardens at Dayton, Ohio, U.S.A.—Every Saturday morning about 1,200 children, varying in age from 4 to 14 years, are the guests of the National Cash Register Co., at Dayton, Ohio, U.S.A. The youngsters gather in the great hall at the factory or at the City Club, and they are taught to retain health, form good habits, and become good citizens. This item in the welfare work undertaken by the company was commenced about three years ago among the boys and girls living in the worst part of Dayton, who did considerable damage and had become a general nuisance. Instead of having the youngsters arrested, Mr. J. H. Patterson "got them to do things." Every boy was given a garden, the company providing the land, tools, seeds, and a competent instructor. The ringleaders of the boys were placed in charge. The outcome of the experiment was the formation of the Boys' Garden Company, organised and chartered under the laws of Ohio. The company has offices and directors, and declares a dividend, so it is small wonder the boys work splendidly and achieve wonderful results. Gardens are now provided for quite small boys and girls, as well as for older girls. Not only do the youngsters work these gardens in admirable fashion, but they have turned their attention to the gardens attached to their homes and created an enthusiasm for gardening among parents, relatives and friends. The result of this wonderful work is seen throughout the Slidertown district, which, from being one of the worst parts of Dayton, has now become one of the most beautiful under the title of South Park.

Classified List of all Known Dahlia Names.—Prof. J. S. Norton, in conjunction with the American Dahlia Society, is compiling a complete alphabetical list of names of Dahlias, with brief descriptions. No full list has been compiled for many years past and possibly no serious attempt has ever been made to get together a complete list of varietal names. Mr. T. H. Hall, of the Geneva Experiment Station, New York, began, several years ago, an index of all the Dahlia varieties, and in 1915 had obtained between 5,000 and 6,000 names. Prof. Norton also began a similar list, somewhat later, and hearing of Mr. Hall's list through the American Dahlia Society, secured a copy and arranged to help Mr. Hall in further work. The war interfered with these plans and Mr. Hall's unfortunate condition of health rendered him unable to continue the work. With the encouragement of the president and secretary of the American Dahlia Society, Prof. Norton began again this year to extend the list and bring it up to date. The sources of this list are: (1) Mr. Hall's list as a basis. (2) Several hundred catalogues covering the period from 1890 to 1920, but whilst most of the recent American catalogues are in this collection,

foreign dealers are not well represented except for 1914 and 1915. (3) The card index of varieties of cultivated plants begun by the U.S. Department of Agriculture. (4) The collection of trade catalogues in the Department library. Though this contains thousands of catalogues it is still very incomplete. In the past libraries have not realised the importance of collecting seed and plant catalogues, and many of these valuable records of the introduction of cultivated varieties, and often the only record have been lost. (5) The books on Dahlias in the Department of Agriculture library and the Library of Congress. Among these the annual publications of the English Dahlia Society have been a valuable source, but Prof. Norton has found only two numbers of these in Washington libraries. (6) Several horticultural journals, representative of the leading Dahlia producing countries. The principal ones used are: *The Gardeners' Chronicle* and the publications of the Royal Horticultural Society, for England; *Revue Horticole*, for France; *Weekblad voor Bloembollencultuur*, for Holland; *Gartenwelt* and *Gartenflora* for Germany.

Appointments for the Ensuing Week.—Wednesday, August 18:—Shrewsbury Show (two days). Thursday, August 19:—Perth Horticultural Society's Show (three days); Aberdeen Society's Show (three days). Friday, August 20:—Dreghorn Society's Show; Forfar Society's Show (two days). Moffat Society's Show; Blairgowrie and Rattray Society's Show (two days). Saturday, August 21:—Burntisland Society's Show; Carnwath Society's Show; Caledonian Society's Show; Hutchesontown Society's Show; Glencairn and Tynron Society's Show; Leith Society's Show; Maybole Society's Show; Mearns Society's Show; Rutherglen Society's Show; Thornhill Society's Show (Perthshire).

"Gardeners' Chronicle" Seventy-five Years Ago.—*Management of Forced Strawberries.*—Practical gardeners know from experience that Strawberries forced in pots early in the spring, when turned out into the open air and planted in the ground, afford blossoms throughout the summer. Strawberries, if gently assisted by artificial heat under glass in February, and the temperature gradually raised, afford ripe fruit towards the end of April. But the fruit, however beautiful to the eye and acceptable at a season of the year when fruit is scarce, is always watery and flavourless. My practice for many years past has been, at the end of the first week in May, to place the pots on the surface of the front border outside my Grapery (not plunged in the ground). Ten days' exposure to light and free ventilation gives the fruit a fine colour and a very high flavour, much exceeding the flavour of Keen's Strawberry grown in beds in the open air. The last two seasons, thinking we might turn this disposition to blossom to better account and obtain fruit throughout the summer by taking pains to keep the plants in vigour. As soon as the plants had ripened all the first crop and were beginning to show their second blossoms I gave them one watering of the black stable-ward water which runs into a tank in my garden, carefully removing all runners. This brought out a second crop of blossoms and fruit as abundant as the first: the fruit afforded a daily supply till the middle of August. But the season last year being so unusually dry, I had no black stable water in the tank; I therefore ordered some guano, say a garden-trowelful, to be mixed in a three-gallon water pot and let remain and soak for a few hours: the plants then, in the middle of August, had one more watering of this liquid manure, which produced a third crop of blossom and fruit. Early in October the plants were carefully turned out into the open ground for this summer's crop, where they continued to show flowers till put an end to by frost. And, what is very remarkable, all the plants treated as above were more luxuriant this year, the leaves of a darker green, and afforded the largest crop of fruit in the open ground I ever saw. The result of my practice has not a little surprised many of my neighbours. *John Williams, Pitminster, Worcester-Gard. Chron., August 16th, 1845.*

FLORISTS' FLOWERS.

THE CINERARIA.

FOR greenhouse and conservatory decoration no florist's flower is more popular, or more easily cultivated than the Cineraria. The plants are sturdy, compact in growth in the case of many strains, with flowers of the finest shape and substance. Cineraria flowers exhibit some of the richest and brightest of self colours, including every conceivable shade of carmine, crimson and pink, as well as pure white. Others have defined margins with zones of various colours. No doubt the florists' race originated from *C. cruenta*, *C. populifolia*, and other species, but by continual selection of the best seedlings and skilful cross-fertilisation, the race has been brought to the present state of perfection.

Cinerarias may be easily raised from seeds in August or September in light, fine soil in shallow pans or pots, and lightly covered. As soon as the seedlings have formed one or two leaves they should be pricked out separately, in somewhat richer soil, and subsequently, as they become strong enough, they should be potted singly into small pots and afterwards repotted as necessary. From seeds sown in April or May, plants large enough for all decorative purposes may be produced. In the after treatment, the aim should be to secure as firm a growth as possible. Good, sturdy plants with leaves of medium size are the best. To retain a good variety, offsets may be taken from the plants which have finished blooming. When the offsets have made two or three leaves remove them, with the roots uninjured, put them in small pots, place them in a cold frame or hand light, and shade them from the bright sunshine.

A comparatively new strain of the florists' Cineraria, with very distinct colouring, is *Antique Rose*. The plants are of dwarf and compact habit and produce a profusion of flowers of beautiful shades of rose. *Intermediate Blue* has flowers of a deep, rich, blue shade. *Matador* is very distinct and has flowers of a rich, reddish shade; it is similar in habit to *Antique Rose*. The flowers of *Pompador* have a red, pink, or white ground, clearly striped with various shades of colour. *Snowball* has pure white flowers and a dwarf, compact habit.

A most useful strain is *stellata*, or the *Star Cineraria*. The plants are magnificent for conservatory decoration, growing to the height of 2 to 2½ feet. The large heads of flowers are borne on long stalks, the individual blooms being star-shaped, and smaller than those of the florists' varieties, whilst the colours are all combinations of white, violet, blue, pink, and lilac, almost to red, but the objectionable magenta shades have been eliminated. The *Star Cinerarias* are valuable as cut flowers.

Amongst the many distinct hybrids which have been raised during the past few years, the *Cactus* and *Feltham Beauty* strains are of great merit. The *Cactus* strain embraces a wide range of colours, with petals slightly bent and twisted near the tips. *Feltham Beauty* is the result of crossing the florists' varieties with *C. Heritieri*. The *Cactus* variety derived from *Intermediate Blue* × *Heritieri* produces flowers of a beautiful clear blue colour, and has a light and graceful habit. The *Feltham Beauty* strain is free flowering, of elegant form and quite distinct, carrying loose, lightly branched heads of large blooms.

Decorator (*Feltham Beauty* (carmine) × *Heritieri*) has flowers of a bright cerise colour. *Feltham Beauty Royal Blue* has deep blue flowers with yellow centres. *Feltham Bouquet* (*stellata* × *multiflora*) is a large, tree-like variety, growing to the height of 3 ft. to 5 ft., of branching habit, and bears an abundance of rosy-lilac flowers. This is a noble plant for the decoration of the conservatory. *Feltham Bouquet compacta* is a dwarf form with pale mauve flowers.

C. flavescens (*Feltham Beauty* (blue) × *Senecio auriculatissimus*) has blooms of a beautiful, creamy yellow colour; these open primrose yellow and fade to cream colour with

age. *Sunrise* (*Feltham Beauty* (pink) × *Senecio auriculatissimus*) produces creamy white flowers edged with rose-pink. Those two hybrids are the most distinct of all Cinerarias and should prove to be the forerunners of quite a new race.

Fairy Queen (*cruenta* × *Heritieri*) is a free, late-flowering hybrid, with white flowers in which the centre and tips of the petals are reddish-brown. *Fantasy* (*cruenta* × *Feltham Beauty* (carmine)) has deep magenta flowers, and is of light and graceful habit. These hybrids are all very free-flowering, quite distinct, and have flowers of elegant form and pleasing shades of colour, carried in loose, light, branching heads. *John Heal*, F.M.H.

but care must be taken to prevent scorching of the foliage. There are a few hybrids, notably *Dia-Laelia Veitchii*, *Dia-Cattleya Sanderae* and *D.-C. Colmaniae*, and they have proved more amenable to cultivation than *D. bicorunum*. *T. B.*

SOPHRO-LAELIO-CATTELEYA LAURA.

This brightly-coloured hybrid, for which Messrs. Charlesworth and Co. were given an Award of Merit at the meeting of the R.H.S. on July 27, is a striking example of the progress made by the Orchid hybridist. Raised between *S.-L.-C. Pandora* (*C. Dowiana* × *S.-L. heat-nensis*) and *S.-L.-C. Marathon* (*C. Empress Frederick* × *S. L. Psyche*) it contains *C. Dowi-*



FIG. 35.—PINK VICTORY.

ORCHID NOTES AND GLEANINGS.

DIACRIUM BICORNUM.

THE Orchid known as *Epidendrum bicorunum* or *Diacrium bicorunum* is a difficult subject to establish when newly imported, and difficult to keep in good health for many years afterwards. The pseudo-bulbs are hollow, and probably become damaged during the journey to this country. During the growing period a high temperature and moist atmosphere are essential, but when growth is completed cooler and drier conditions should prevail. Repotting should be done soon after the plants pass out of flower, and when root action is evident at the base of the new growth. Pans or ordinary flower pots prove suitable receptacles and should be filled one-half their depth with drainage material. A suitable rooting medium consists of *Osmunda*-fibre and *Sphagnum*-moss in equal parts with a moderate sprinkling of crushed crocks to ensure a free passage for water, for although the plants enjoy a copious supply of water when growing freely, anything approaching stagnation at the roots will mean disaster. Freshly potted plants will require careful watering for a few weeks. When the new pseudo-bulbs are nearing completion more sunlight may be admitted to them,

ana (twice), *C. Mossiae*, *Laelia purpurata*, *L. cinnabarina*, and *Sophranitis grandiflora* (twice). Although each species plays its part no doubt, it is not easy to trace some of the ancestors, the flower in effect being like a medium-sized *Cattleya* of deep mauve colour, with a distinct reddish yellow shade, the lip being ruby-crimson with gold lines from the base. All the hybrids used in the production of *S.-L.-C. Laura* were raised by Messrs. Charlesworth and Co.

PINK VICTORY.

This delightful, new *Pink* belongs to the old florists' type, and has flowers of good size and excellent shape. The blooms are of a deep crimson colour, as fragrant as the *Old Clove Carnation*, and borne on stiff stems. Some of the growths produce as many as five flowers. The variety *Victory* was raised by Mr. C. H. Herbert, of Acock's Green, Birmingham, from one of the old-time laced *Pinks*. He has raised many beautiful new sorts, and in the one illustrated (Fig. 35) he has produced a self-coloured, fragrant flower that is a model of good form. The variety obtained an Award of Merit when exhibited before the Royal Horticultural Society at the Chelsea Show on June 1 this year.

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Nodde, Codicote, Welwyn, Hertfordshire.

Strawberries.—A part of the Strawberry plantation should be renewed each year, as young plants produce far superior fruit to old ones. Three years is the limit we allow a plantation, and when plants have occupied the same site for this period it is best to destroy them. Late varieties, such as Givon's Late Prolific, give the best returns if retained only for two seasons. For the main Strawberry bed select an open situation, but where early fruits are required it is desirable to choose a warm, south border. On such a site plants will produce ripe fruits quite a fortnight earlier than those growing in the main bed. On the contrary, to extend the Strawberry season, late varieties may be planted on a north border. Where the plantation is expected to last for three seasons it is essential that the ground should be worked deeply and heavily manured. Much time may be saved at this season of the year if the site chosen for the new plantation was well trenched and manured during the winter and cropped with some early vegetable.

Planting.—Perhaps the best time to plant Strawberries is during the middle or end of August or as soon as well-rooted runners can be obtained. When planting Strawberries the soil must be made quite firm about their roots. Should the weather prove dry watering must be afforded until the plants have become well established. The distance to plant may vary a little according to the condition of the soil and the strength of the varieties. Rows of Royal Sovereign and other strong growers should be from 2½ ft. to 3 ft. apart, and the plants 2 ft. asunder in the rows. Medium growing varieties may be planted 2 ft. by 1½ ft.

Varieties.—To maintain a supply of Strawberry fruits over as long a season as possible it is necessary to grow early, midseason and late varieties. For an early supply King George, Royal Sovereign, and Vicomtesse Hericart de Thury may be chosen; for the main crop, Leader Laxton's International and Fillbasket; white Givon's Late Prolific, Waterloo, and Laxton's Latest of All are good late sorts.

Newberry.—This useful fruit deserves to be largely grown for dessert purposes; it is also useful for cooking. When the fruits have been gathered the old canes should be removed entirely, and the new growths tied in to preserve them from being injured by strong winds. No advantage is gained by overcrowding.

Loganberry.—Plants of the Loganberry will require similar treatment to that advised for the Newberry.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNBURNHOLME, Warter Priory, Yorkshire.

The Dry Wall.—Seedlings which have grown up on the dry wall should be thinned, and those raised in pans should be pricked out as soon as they are large enough to handle. Continue to protect the latter with hand lights for a short time so that the ultimate planting of the young stock in the wall crevices may not be too long delayed. Where it is desired to quickly propagate Iberis, Helianthemums, Lithospermums and similar subjects by means of cuttings, prepare a bed of sand and fine leaf-mould, in equal proportions, in a cold frame. Remove the cuttings with a heel to facilitate striking and insert them firmly in the prepared bed. Keep the frame close and moist and give shade from bright sunshine. Place the rooted cuttings in small pots as early as possible, using a gritty compost, and place them in a frame on an ash base. Immediately new root action takes place gradually inure the plants to full sunshine and

air. Prevent vigorous species from overcrowding the wall and tightly fill hollow spaces with new compost.

New Stock.—Lavender, Viola, Pentstemon, Gnaphalium, Nepeta, and Santolina should be propagated at an early date. The most convenient way to raise a new stock of these plants in quantity is in frames containing 6 inches of fine sandy soil over a shallow bed of coarse cinders. Make the soil firm and give it a thorough watering immediately after the cuttings are inserted. Afford shade from sunshine, admit a little air on warm days, and lightly spray the foliage when closing the lights.

Calceolaria amplexicaulis.—Standards of this plant are useful for flower beds, and they have the advantage of resisting drought. Cuttings should be rooted early when required to form standards, potted, and given the maximum of light and genial warmth during the winter months. Cool, moist conditions aid the quick rooting of the side shoots.

Centaurea and Heliotrope.—A successful method of propagating these subjects from the open is to provide a frame with a north aspect in which to place the receptacles. Pots or boxes may be used, according to the quantity of cuttings to be rooted. Keep the frame close and lightly cover the glass, to exclude strong light, for the first ten days. Heliotrope should be well rooted in three weeks from the date of insertion, but Centaurea requires a much longer period, especially if the shoots are at all sappy. When rooted, the plants should be gradually subjected to full sun and abundance of air. Where it is desired to form standards of Heliotrope, select vigorous young plants, pot them into small pots without delay, and grow them on in a warm pit. If small Centaurea plants are necessary to conform with the bedding scheme for 1921, seeds should be sown in October and the seedlings grown under cool conditions.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weovoe
Castle, near Oerdfiff.

Onions.—Seeds of Giant Rocca, White Tripoli, and Ailsa Craig varieties should be sown between the middle and end of this month. As the seedlings will remain where they are raised until required for transplanting in the spring, the position of the seed bed should be well drained and of a fairly rich nature. After working it to a fine tilth, make the surface firm and sow the seeds in drills an inch deep and drawn one foot apart. Onions intended for exhibition will now be of considerable size, and require careful treatment to finish them perfectly. The soil at the base of the plants should be loosened, and loose, brown skins removed. It is not advisable to allow them to mature where they are growing, or a number of bulbs will be lost through splitting. As they reach a desirable size, lift them with a fork, trim off the roots to within an inch of the base and remove the foliage just above the neck. After washing the bulbs, stand them, on some soft material to prevent bruising. Ripen them by placing them in a light and airy, but not a sunny, position, otherwise the outer skin will shrink and crack. Allow twenty-one days after lifting to complete this finishing process. Where extra size is desired, this can be attained by protecting individual bulbs where they are growing with a handlight placed on four bricks to keep it clear of the ground, the object being to keep them from rain and dew and prevent bursting.

Spring Cabbage.—A sowing of Spring Cabbage seeds made about August 12 usually produces the most satisfactory results—hence the reminder to sow as previously advised.

General Remarks.—The long duration of wet days experienced this season has been unusual, and in many gardens winter greens have not grown as quickly as usual. The ground between these crops should be deeply stirred with a Canterbury Hoe or similar tool, and if a light dressing of sulphate of ammonia is sprinkled around the plants, just previously to hoeing, it will aid growth.

FRUITS UNDER GLASS.

By F. JOHANN, Gardener to Lieut.-Col. SPENDER CLAT,
M.P., Ford Manor, Lingfield, Surrey.

Frame Melons.—Melon plants in frames have not had a good time during July, but the fruits should now be well advanced, if not actually ripening. Great care will have to be exercised to ripen them thoroughly if the weather continues dull and sunless. Where growths have been allowed to ramble over the surface of the beds each fruit should be elevated upon an inverted flower pot to keep it clear of woodlice and moisture. The fruits should not be fully exposed to sun when swelling, but once they have attained full size sunlight should be allowed to reach them by slightly pushing back the old leaves. A few laterals will assist the fruits to swell and keep the plants in good health, but once netting commences the laterals may be removed by degrees, and water should not be allowed to touch the fruits. A little more top-heat and drier conditions should be maintained after this stage, and if the common error of overfeeding has been avoided medium-sized fruits of excellent flavour will be obtained.

Cucumbers.—Seeds should be sown at once to produce plants in readiness for planting out as the Melons are disposed of. Never allow the young plants to stand about in small pots if the pits are not ready for them, as starvation is the first step towards red spider and disease. The compost for winter-fruited plants cannot be too rough and open; reject the finest parts of the loam and add lime rubble and a little charcoal. Seedlings planted during this month must be kept growing steadily, but no feeding should be attempted, as gross foliage made at the outset invariably suffers early in the autumn. Train the plants thinly and ventilate the house or pit freely through the early part of the day to ensure a healthy and sturdy growth. Old plants may still be cut over and renovated, but where small pits are available hard cropping and quick removal give the best results. Plants in pits and frames will now be doing good service, and with care may be kept fruiting for some time to come. Feed the roots moderately, ventilate early and aim at a temperature of 90° after closing at 3 p.m.

General Remarks.—Now is the time to make preparations for root-lifting, root-pruning, top-dressing and any other matters to be attended to in early autumn. Loam should be cut and compost prepared equal to the probable demands. Additions to new vine borders are made from year to year as the roots require it, and the most convenient time to make them is in the autumn. Two feet at a time is ample; the retaining wall of turf should be forked down, the roots cut back with a sharp knife and the new compost added and supported by a new wall of turfy loam. As the old border is solid and firm, care must be taken to build up the new part equally firmly.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

Disa.—The genus Disa includes several interesting and beautiful plants, but unfortunately they have not proved very amenable to cultivation, especially those of the *D. graminifolia* section, and it is doubtful if any of this group are in commerce to-day. The kinds usually met with are the scarlet *D. grandiflora*, *D. racemosa*, *D. tripetaloides*, and the hybrids derived from the intercrossing of these species. Of the hybrids, *D. Luna* is the best if judged from the cultivator's standpoint. I believe the principal causes of failure are a close, stuffy atmosphere, and repotting the plants at the wrong season. Disas have no decided resting period, and almost before the flower spikes are removed the new growths and fleshy roots appear. It is at this stage that repotting should be done. Small plants that have filled their receptacles with roots may be potted with little disturbance, but specimens that have produced several spikes are best divided and each growth given a separate pot or pan. Ordinary flower pots should be chosen and filled one-fourth of their

depth with drainage material. A suitable rooting medium consists of rich fibrous loam with all the fine particles removed, three parts, and the remainder made up of good peat, and sphagnum-moss. A light sprinkling of crushed crocks or charcoal may be added if the loam does not contain much fibre. The compost should be used in a more or less lumpy condition, made fairly firm, and surfaced with living Sphagnum-moss, which will tend to keep the roots moist. For a few weeks after repotting, afford water in moderation, but when the roots have entered the fresh compost a liberal supply of moisture will be necessary. Disas should be grown at the cool end of the Odontoglossum house throughout the year, and, for preference, immediately beneath a ventilator. Plenty of fresh air is essential, and the ventilator may be left open, more or less, day and night. To keep the roots cool and moist the pots may be plunged in moss or similar material. Shade will be needed in summer, and during hot weather the plants should be lightly sprayed overhead with rain water. Insect pests must be watched for, especially when the new growth is pushing through the soil, as at that stage, if attacked by thrips, it becomes stunted, and rarely recovers. To keep the plants clean they should be dipped occasionally in a weak solution of some reliable insecticide, the pots being laid on their sides until the liquid has drained away. When the division is vaporised Disas should be removed to another house until the fumes have escaped.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Lachenalia.—Lachenalias are seldom seen in good condition, but when well grown they are so charming that they deserve to be more generally cultivated. They also have the additional merit of lasting in flower for a long time. In all stages of their cultivation they require perfectly cool treatment. The stock of home-grown bulbs should be sorted into different sizes. The smaller sizes should be planted in small boxes or pans and grown on until they have reached flowering size. The larger sizes may be put into pans or pots, according to requirements, placing five or six good bulbs in a 48-sized pot. Lachenalias also look well grown in wire baskets, and this is a favourite method with some cultivators. The potting compost should consist of a good medium loam, enriched with a little dried cow manure and leaf-soil, with sufficient sand or old mortar rubble to keep the whole porous. Stand the potted bulbs in a cold frame and keep them shaded until they start into growth. Frequent waterings are harmful before plenty of roots have developed. There are now many named varieties, but for general cultivation the best sorts are *L. Nelsonii* and *L. tricolor*.

Achimenes.—As the earliest batches pass out of flower, the plants should be removed to cold frames, where the lights can be placed over them during wet weather, otherwise they may be left fully exposed, so long as any foliage remains; once the leaves and stems have died down, the roots should be kept dry. Although out of flower, Achimenes must not be neglected, as the production of sound, plump tubers that will pass safely through the resting period depends largely on the treatment afforded at this period of their life. The aim of the cultivator should be to keep the foliage in a healthy condition as long as possible, and withhold water gradually as the foliage matures and dies off. These remarks apply equally to all summer-growing subjects which possess rhizomes or tuberous root stocks, including *Richardias*, *Gloxinias*, *Caladiums*, and tuberous-rooted *Begonias*. Many of these subjects die during the winter because they are stored in a place with too low a temperature; it should be remembered that most of them are tropical subjects, and warmth as well as dry conditions are essential for them during winter.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables and Summaries, ante pp. 71-76).

1. SCOTLAND, E.

ABERDEENSHIRE.—Apples are only a small crop. The trees presented a fine appearance in spring, with plenty of blossom, but very few fruits set, and the trees were subsequently much infested with aphids. Strawberries were a good crop, but the berries ripened very unevenly. A slight frost in May, and dry weather afterwards prevented the berries from swelling, and many were of inferior flavour. *James Grant, Rothienorman Gardens.*

—Early in Spring the prospects for good crops of Apples, Pears, and Plums were remarkably good; indeed, I do not remember ever having seen such a wealth of blossom, but frost

the flowers. *Alex. Kirk, Consulting Gardener, Paton Street, Alva.*

EAST LoTHIAN.—Apricot trees set a very heavy crop. Plums less heavy but good, and Apples and Pears, the latter all young trees, average crops. Peaches, on the contrary, are a very small crop, and the trees were partly crippled by an attack by myriads of winged aphids last autumn which destroyed everything green, even to the tips of the shoots. Strawberries have never been finer, but the later sorts were much damaged by field mice, of which there has been a perfect plague. Black Currants (*Victoria*) were very fine, and also Raspberries, but Gooseberries were poor, probably owing to much spraying. Mildew, I believe, is everywhere on these bushes. The season, though late and colder than usual, has been a good one for vegetation in general. *R. P. Brotherton, The Gardens, Tynningham Prestonkirk.*
(To be continued.)



FIG. 36.—*RUBUS SCHLECHTENDAHLLII*.

in the latter part of May and June did a great amount of damage to these crops. *John McKinnon, Haddo House Gardens.*

BERWICKSHIRE.—Apple and Plum trees developed a splendid lot of bloom, but owing to cold winds few fruits set. Small fruits have done well, although Strawberries suffered from want of rain. However, the fruit crops generally in this district are fairly satisfactory. In a year or two there will be no Gooseberries in the district owing to disease. *Peter Smith, Duns Castle Gardens.*

CLACKMANNANSHIRE.—The fruit crops in Clackmannanshire are without doubt the worst I have known for 40 years. Fruit trees and bushes produced a profusion of blossom, but cold blizzards prevailed in April for several days, and destroyed

RUBUS SCHLECHTENDAHLLII.

AMONG the many Blackberries which have been cultivated in English gardens from time to time none appears more promising than *Rubus SchlechtendahlII*. It has been growing in the R.H.S. Garden at Wisley since 1914, when it was sent there by R. C. Appleton, Esq., of Beverley, who spoke highly in its praise, but not too highly. It bears consistently large crops of fine fruit, black, sweet, and with the true wild Blackberry flavour, which so many of the cultivated forms lack or possess in only a moderate degree. Our illustration (Fig. 36) gives a good idea of the free-fruited habit of the plant as it grows trained on a wire espalier at Wisley.

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THE MARKET FRUIT GARDEN.

JULY was a very trying month for fruit-growers, on account of the frequent interruption of work by rain. The pickers were seldom able to put in a full day's work, which placed difficulties in the way of finishing the harvest of soft fruits and starting that of Plums. Several times they had to sit idle for an hour or two in the morning, waiting for the trees to dry, and then, a few hours after they started, work would be stopped by another shower. As the pickers are casual hands, the loss fell on them rather than on the grower. But it was otherwise with the permanent staff, for whom it was often impossible to find useful employment. It may be stated without exaggeration that half their work during the month was wasted, for there was little beyond hoeing that needed doing, and rain set the weeds again as soon as they were disturbed. As a result, the plantations are now very foul with weeds. However, there is a silver lining to every cloud, and growers can find comfort in the improvement in their prospects due to the rain. The trees certainly look all the better for it, and the fruits are now swelling to a size that will make the crop bulk much better than at one time seemed likely.

IMPROVED PROSPECTS.

My own fruit prospects are certainly much improved, and I anticipate a prosperous season after all. I am evidently much more fortunate than the majority of growers. Plums are quite a big crop, and several growers and others who have visited me, after seeing the crops in Kent and elsewhere, state that they have not seen so many Apples anywhere else. This only shows how very short the yield of Apples must be in the country as a whole, for they are by no means plentiful with me. Worcester Pearmain and Early Julyan are the only two varieties with a full crop, and many fruits of the former are small and scabby. The greatest scarcity is in late, cooking varieties. A curious feature of the season is the fact that Monarch Plums are plentiful almost everywhere. This is one of the earliest varieties to bloom, and it may have chanced to encounter better conditions for fertilisation than the later-blooming varieties.

APPLES FREED FROM CONTROL.

The close of the month brought the cheering news that the Apple market would be free from price restrictions on and after August 1. This removes a great injustice to fruit-growers. They have to put up with the same enforced raising of wages as farmers; but, whilst the farmers get some compensation in the shape of guaranteed prices for their corn, fruit-growers have

been made to endure artificially depressed prices for their chief crop, thus having their expenses raised and their returns decreased at the same time. There is no fairness about such a policy. It seems to have existed simply because farmers can easily grow some other crop if not encouraged to grow Wheat, whereas fruit-growers are powerless to substitute anything for a permanent crop such as Apples.

In a year of plenty, like 1919, the control of prices did not matter much, as only a few choice varieties of Apples would have realised more than the maximum price in any case. It is very different in a season of scarcity like the present, and it was hard on growers in early districts that the restrictions were not removed sooner. Practically all cooking Apples of reasonably good quality reached the maximum price during July, and it was impossible for choice dessert Apples to make more. For instance, I had to sell a splendid sample of Beauty of Bath, which takes a particularly brilliant colour on my soil, for the same price as green fruits of Early Julyan and Lord Grosvenor—or very nearly the same—for salesmen were allowed to charge the purchaser with carriage and other marketing expenses in the case of extra good fruit, and this was done with Beauty of Bath. Obviously the last-named were worth twice or three times as much, being the first Apple on the market with colour and dessert quality. Fortunately there is still the bulk of the light crop of Beauty of Bath to be picked. (Since the above was written they have realised up to 2ls. per half-bushel.)

FAULTS IN APPLES.

It is sometimes said that too many new varieties of Apples are introduced. Certainly the list of varieties is a long one, but there is still plenty of room for improved kinds for market culture. Probably we are well enough furnished with cookers, but there are very few dessert Apples that are profitable to grow for market. I cannot name a single variety that is faultless. Some growers state that Worcester Pearmain is the only dessert Apple really worth growing. It is certainly the most reliable, for it seldom fails to yield a good crop (there are plenty of fruit even this year), and its colour sells it; but it has numerous faults. It is only third-rate in quality and liable to scab, whilst the tree is a poor grower and cankers badly in many soils. Moreover, it is a mid-season variety, whilst early and late kinds are wanted most. On my land, Beauty of Bath is nearly perfect as an early Apple, as it takes a brilliant colour, grows and crops well, and is practically free from fungous diseases. But it has the fault of being rather too acid for many tastes, whilst the fruit drops very readily, and the tree is a favourite with aphides and Apple suckers. So one could go on through the list of varieties. Cox's Orange Pippin cankers hopelessly; Allington Pippin scabs badly and overcrops every second year; Gladstone is too soft to travel well; Blenheim Pippin takes years to come into bearing; Charles Ross is too big; James Grieve cankers and has not enough colour; and so on. We still want early and late keeping varieties with the colour and regular cropping qualities of Worcester Pearmain, but with better flavour and a healthy constitution.

VARIETY TESTS.

Many new varieties have been introduced in recent years, and several have been described as being of promise as market Apples; but too often we hear nothing further about them after they are shown, and perhaps given an award

by the Royal Horticultural Society. There is need of many demonstration stations distributed about the country to test both new and old varieties under various conditions of soil and climate. I understand that there is good prospect of such stations being established before long, chiefly to demonstrate the results obtained at the principal experiment stations, such as those at East Malling and Long Ashton. Such a scheme deserves every encouragement from market growers.

Variety tests in particular are seldom of more than local value. As an example of this I would mention the trials of Black Currants at East Malling. As most readers know, the Baldwin group has shown decidedly the best cropping powers there, such popular market varieties as Boskoop Giant and Seabrook's Black making a poor show in comparison. The average weight of fruit per bush over three seasons for the four main groups into which the Black Currants have been classified at East Malling is as follows:—French, 1.44 lb.; Boskoop Giant, 0.91; Goliath, 1.25; and Baldwin, 2.49.

The French group, it should be explained, includes Seabrook's Black, whilst Victoria and Goddard's Monarch, two more market varieties, fall under the Goliath group.

When I saw the collection at East Malling I felt convinced that the Boskoop and the French varieties did not show their best form on that land, and results obtained this year on my place seem to confirm this. Boskoop Giant, which gave only 0.91 lb. per bush at East Malling, yielded quite 2 lb., whilst Seabrook's Black, in their second year of cropping, yielded 1.83 lb. The latter result does not do justice to Seabrook's Black, as one row of the plot of 300 bushes is too close to some Plum trees, and the plants do not grow or fruit so well in consequence.

My figures, though not so exact, are good enough to convince me that the Boskoop Giant and French Currants give better results with me than they do at East Malling. I think that moister conditions in this Sussex district cause less "running off" of the fruit. Unfortunately I have no Baldwin bushes for comparison; but my present intention is to plant Seabrook's Black, which is a grand market Currant, and very slightly affected by bud mite so far, rather than Baldwin, with its small fruit and serious liability to "big bud."

DISC HARROWS.

The horse cultivation of a fruit plantation for the first time in spring is often a difficult matter, because the ground has been trampled hard and the surface is covered with weeds. In such conditions the ordinary cultivator is apt to glide over the surface instead of breaking through it. I had heard so much of the value of the disc harrows or cultivators used by farmers with their tractors that I had a narrow one made to go between the rows of fruit trees, hoping that the discs would cut through a hard surface and enable the ordinary cultivator to work better afterwards. I am disappointed to find that the new implement cannot deal with a hard surface, though the test I gave it was certainly very severe. It is necessarily much smaller and lighter than the disc cultivators used with tractors, and probably needs weighting in some way. It is a nice little tool, and will certainly be useful on softer ground, even if I have to confess that it is a failure for the purpose for which it was bought. I should be very glad of any hints from readers who have used them as to the conditions in which the cultivators do their best work. *Market Grower.*

TREES AND SHRUBS.

TENDERNESS OF EUCALYPTUS.

SEEDS of *Eucalyptus coccifera*, *E. urnigera* and *E. Muelleri*, collected in Tasmania and kindly supplied me by Professor Augustine Henry, were sown in a hotbed in the spring of 1912. They germinated well and grew rapidly. The seedlings received some protection during their first winter. Afterwards they appeared to be hardy and capable of withstanding frost in a sheltered garden in Cumberland, situated at an elevation of 200 feet and at a distance of 8½ miles from the sea (Solway Firth). One plant of *E. urnigera* grew exceptionally well, attaining the height of 5½ feet by the end of its second summer. It was planted out permanently in an arboretum in a fairly sheltered position in May, 1914. It survived the winter of 1914-15, but succumbed during the following one.

Owing to my absence from home through the war I was unable to superintend the permanent planting-out of most of these young *Eucalypti*. This was done late in the springs of 1915-16-17. Possibly better positions in the arboretum might have been chosen than were selected. Only one of the saplings, a specimen of *E. coccifera*, survived the war period. The young trees rooted during the summer, making satisfactory top growth and appeared happy during the winter, but were unable to resist the frosty east winds of early spring. I quite hoped the exception would become a permanent small tree, as it had passed successfully through two winters with frosts sufficiently prolonged to provide skating. It had attained the height of 8 feet.

A few specimens of these *Eucalypti* were, in addition, planted in permanent positions in the garden and about the grounds, so that they might have better shelter and soil than was possible in the arboretum. Some of these were growing well, especially *E. coccifera*, up to November of last year (1919).

Though last winter (1919-20) was remarkably mild, yet in this part of England we experienced a November frost unusual both for its earliness and also for its severity. The only local thermometric readings available were taken at a place situated three miles away, at a similar distance from the sea, but at an elevation 100 feet lower. Only minimum shade readings had been taken and these for the nights, in 1919, were as follows:—Nov. 10-11, 25° F.; Nov. 11-12, 21° F.; Nov. 12-13, 11° F.; Nov. 13-14, 11° F.; Nov. 14-15, 16° F.; Nov. 15-16, 10° F. Thaw set in during the evening of November 16.

The *Eucalypti* were unable to resist this frost. The sole representative (*E. coccifera*) in the arboretum was killed outright. Specimens of *E. urnigera* and *E. Muelleri* in the garden and grounds succumbed, and those of *E. coccifera* were killed to the ground level with one exception. This latter has probably escaped through being screened somewhat from the frost owing to its shady position, where, should it continue to survive, it is never likely to make a pleasing-looking shrub or small tree. Some of the *E. coccifera* plants are sprouting from the base.

The frost referred to acted somewhat strangely, for other trees, usually considered rather tender, escaped harm, though quite young and growing for the most part in low-lying and, therefore, frosty situations. The following observations may interest arboriculturists:—*Pinus radiata*, 5 to 6 ft. high, uninjured; *P. Pinea*, 3½ ft. high, uninjured; *Cupressus macrocarpa*, 4½ to 8 ft. high, uninjured; *C. sempervirens*, 4 to 6½ ft. high, not cut back more than usual; *Sequoia sempervirens*, 3½ to 6½ ft. high, not cut back more than usual. On the contrary, a specimen of *Cupressus formosensis*, 2½ ft. high, in the garden nursery was killed outright. The young wood of *Eucommia ulmoides* suffered severely, and *Roses* during the following spring revealed the keenness of this frost. Its harmful nature was in the first place probably due to its severity, as it lasted for four consecutive nights. The thermometer in the shade fell well below 20° F. on each of these nights. As a rule in our spells of frosty weather there is only one really severe night at a time. In the second place the earliness of the frost may have had something

to do with its destructiveness. The ever green foliage of the *Eucalyptus* may have been caught before it had become inured to winter conditions. *John Parkin, The Gill, Brighton, Cumberland.*

A NEW HYBRID CRAB: PYRUS ELEIY.

AT one of the spring meetings of the Royal Horticultural Society held this year in Vincent Square, Mr. Charles Eley showed a flowering spray of a very beautiful Crab for which I propose the above name. He raised it in his garden at East Bergholt, in Suffolk, and it is a hybrid between *P. Niedzwetzkyana* (seed-bearer) and *P. spectabilis*. A portion of the spray exhibited is illustrated in Fig. 37. *Pyrus Eleyi* has inherited many of the characteristics of the mother tree, *P. Niedzwetzkyana*. The young shoots are downy, and both they and the foliage have the same reddish purple hue as that species, only it is distinctly brighter and not so dark. The leaves are ovate with a shortly acuminate apex, rounded to wedge-shaped at the base, and vary from 2 to 4 in. in length by 1 to 2½ in. in width; they are downy beneath, especially on



FIG. 37.—A NEW HYBRID CRAB: PYRUS ELEIY.

the deeply-tinged mid-rib, chief veins and stalk. Mr. Eley writes "the very persistent brightness of the young growth is to my mind one of the greatest beauties of the tree; it maintains this colour in favourable seasons until the leaves turn and fall."

How freely it blossoms is shown by the illustration—a characteristic inherited from *P. spectabilis*. The flowers, each about 1½ in. wide, are borne in clusters like Apple blossoms and have the Apple blossom form, but the colour is a delightfully rich, vinous red. But its value as an ornamental fruit-bearing tree is even greater than it is as a flowering one. The fruits are of a rich purplish red and have a conical shape inherited from *P. Niedzwetzkyana*; they are, however, much smaller, being about 1 in. long and ½ in. wide near the base. When, in autumn, they hang in thick clusters from the lower side of the branches, each on its slender stalk about 1½ in. long, there are few garden pictures so attractive. Amongst ornamental Crabs there is certainly none more so, and uniting as it does, in one plant, so much beauty of foliage, flower and fruit, it ought to have a great future in gardens. *W. J. Bran.*

OF SLUGS.

(Continued from p. 46.)

A FRIEND who had been much troubled with the workings of some moles, purchased a trap, and still the moles worked; he sought advice of an expert friend, whereafter he purchased two or three dozen traps and the moles soon disappeared. And so it is with slugs—plenty of traps are needed. A sufficient slug clearance, in a badly-infested garden, cannot be made by placing one trap at one end of the garden and another at the other; realisation will not follow anticipation. My practice, for instance, in a plot ten yards wide, is to put down rows of traps, five or six in a row, about every two yards; if, after a day or two, many slugs have been caught, the traps are re-baited if necessary and allowed to remain another day or two. When they have apparently done their duty they are shifted on to other sites. Near very susceptible subjects, for instance, Lettuces and Cauliflowers wintering under frames, a few traps are kept permanently in position. After trial of several different types

as years passed by, I have settled on a simple trap which we have christened the "Any Pot" trap, inasmuch as almost any receptacle—jam-pot, tin or even a two-gallon bucket—can be used with it.

THE "ANY POT" TRAP.

The essential part of the trap is the bran or bait cup. It is easily made in quantity at home in its best form, by anyone who is capable of bending a bit of wire with the pliers and then applying a spot of ordinary pewter solder; for others who do not aspire to this amount of technical skill, I add a note on other ways of making the cups:—Materials required—a number of used "crown seals" from mineral water bottles, from which the cork discs are removed; a yard or more of wire, conveniently of 14 or 16 L.S.W. gauge and preferably of galvanised iron (according to the number of cups to be made), each one will need about 4 inches; solder and partially "killed spirits," i.e., commercial hydrochloric acid and some scrap zinc.

First the end of the wire is bent (see Fig 38) into a hook about ½ in. or ⅝ in. deep (less depth makes it liable to dislodge by frogs, etc.);

it is then bent back to form a U at right-angles in plane to the first hook; again it is bent, this time in parallel with the original hook; lastly, the free end is bent at right-angles with the last limb of the doubled hook, and cut off about $1\frac{1}{2}$ inch from the right-angled bend; this long projecting piece is then given a slight upward bend, which facilitates its introduction into the holes in the cup.

The bait cup or "crown seal" is perforated on diametrically opposite sides, close to its former upper surface; this may be easily effected with a wire nail of size slightly larger than the gauge of wire that is used. The wire is then threaded through these holes with the concave of the curve towards the top of the crown seal; in this wise it is easy to insert it into the second hole. The wire is then rotated through a half circle so that the wire hook faces downwards and the hollow of the seal upwards; owing to the slight curve that has been given to the wire it retains its position. A drop or two of the soldering fluid is put on, heat applied and a spot of solder will firmly affix wire and cup together. It may be noted that free acid is advisable with the zinc chloride, since galvanised wire has to be soldered; preparations, like "Fluxite," do not work so readily. After being well washed in water, the apparatus may be dried and painted; perhaps one of the cold asphalt japans is the most enduring paint. The cup is then ready for use.

Alternatively, the holes in the cup may be doubled and the wire, which then is preferably of thinner gauge, may be fixed by twisting its parts. Again, by curling the wire round like a watch spring and slightly belling the spiral, a bait receptacle may be formed; the free part of the wire is then fashioned into a doubled hook as aforesaid. Lastly, another mode of forming the device is to cut a thickish disc of cork and thrust in the ends of a piece of wire, the loop of which is formed into a hook, but unless hollowed out somewhat it is not very satisfactory. It is preferable to fix the cup so that the wire holds it with about $\frac{1}{4}$ inch clearance from the hook part; but even if the hook is in contact with the cup, as in some specimens I have made, it will catch slugs quite well.

The pot or receptacle may be of a varied description—for instance, small jam jars, old, condemned, handleless tea-cups, tins of various sorts; when numbers are used it is far more convenient to have a standardised size and shape for the pot; it is also preferable to avoid tins, as even when painted they do not last very long. The pots I use are made by cutting off broken pint size Apollinaris bottles, of which numbers are at command; these are about $2\frac{1}{2}$ inches in diameter, and are cut off at about $3\frac{1}{2}$ to 4 inches deep. Whatever pot is used the wire hooks should be adjusted so that when hooked on to the pot, the cup lies level (see Fig. 39).

The trap is now ready for use; about an inch depth of water is put in the pot and a tiny pinch of sulphate of alumina added (alternatively a large pinch of common salt, sulphate of ammonia, or of many other salts); with a trowel, a suitable hole is dug so that the rim of the pot is just above the ground level, the opening being sheltered by the spare hand, whilst filling in around it, in order to prevent the introduction of earth; the cup is hooked on and bran piled up in it. Lastly, some rain-shelter, such as a piece of broken flower-pot or a piece of glass from a broken cloche, is put over and it is ready for the next slug that comes along.

The shelters I most commonly use are, like the pots, derived from the broken-bottle heap: each quart-sized champagne bottle affords two covers; these are of thick glass, and may even be accidentally trodden upon without suffering. With regard to bait, on one occasion I put out a pair of such traps close together in a sluggy neighbourhood, the one having plain bran, the other also a small piece of Orange peel; the peel attracted nearly twice as many slugs as the plain bran. Following this lead, Orange peel was saved from the dinner-table, dried and kept in the bag in which the bran was stored, thereby

imparting some of its aroma, for it was found to be too laborious to place small pieces each time in the cups.

Besides the above method, or wet process, the killing may be done by a dry process. Instead of putting water into the pot, about half-an-inch depth of medicated sawdust is introduced. Fairly finely sifted sawdust (preferably not Coniferous) is well mixed with 10 per cent. of its weight of sulphate of alumina; this keeps nicely dry and dusty in the pots. This dry method has some advantages in summer time, when water dries up and leaves the trap out of use if unattended.

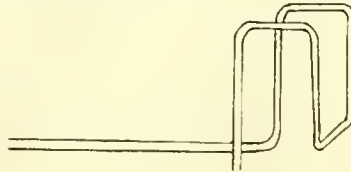


FIG. 38.—WIRE ATTACHMENT FOR THE BAIT-CUPS IN THE ANY-POT SLUG TRAP.

but the dampness from the water has probably some power of attraction in hot, dry weather,

TRAPS IN THE ROCK GARDEN.

For the rockery and similar places which are somewhat confined, a slightly modified form of trap is used. With pots less than two inches in diameter I have taken slugs of $2\frac{1}{2}$ in. to 3 in. length. These rockery traps are made from flat tins such as those in which 2 ounces of Players' Tobacco are sold. A round hole is cut in the lid, rather smaller than the crown seal. The seal is attached to a wire, as in the standard pattern, but instead of a hook the wire is put through a perforation in the lid and fixed with a spot of solder, so that the cup is nicely under the hole. As but little water can be put in these, the dry method is perhaps preferable. They need be hardly, if at all, buried in the earth.

I keep a "slugging outfit box"; this contains

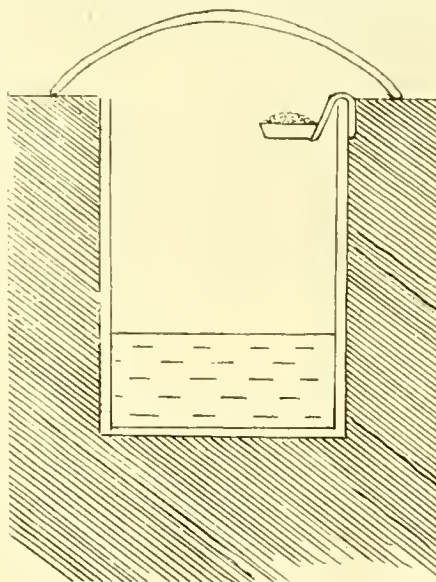


FIG. 39.—THE ANY-POT SLUG TRAP.

a tin of sulphate of alumina, a bag of bran and Orange-peel, a trowel, a small bottle of water, a sulphate of alumina "pepper-pot" and a wire spoon. This last instrument is made by coiling a piece of wire clock-spring-wise at its end and twisting up a handle with the free end; it is invaluable to clear out the corpses from a pot, and also the mouldy bran which soon has a thick layer of growth in ill-attended traps.

(To be concluded.)

PROSPECTS OF TOBACCO CULTIVATION IN ENGLAND.

RECENT research and experiment have shown that Tobacco cultivation is worth developing in England, and it is said that if one thousand acres of British soil, unsuitable for the production of Wheat, were put under Tobacco, the industry would provide profitable employment for two hundred families during at least eight months of the year and would benefit employer, employee and the nation alike.

The cultivation of Tobacco in this country was begun soon after the plant was first brought from America. It was introduced from Florida, probably in 1565, by Sir John Hawkins, although this gift to the eastern hemisphere is more usually associated with the name of Sir Walter Raleigh. To him its introduction is attributed by Edmund Howes, the chronicler, who says that "Sir Walter Raleigh was the first that brought Tobacco into use when all men wondered what it meant."

According to John Worledge in his *Systema Agriculturae*, of 1675, there were plantations of many hundreds of acres of Tobacco in Gloucestershire, Devonshire, Somersetshire and Oxfordshire. Worledge describes the processes of growing and preparation:—"The young plants," he says, "are raised from seed in February or March on a hot bed and then planted out in your prepared ground, from whence you may expect a very good crop and sometimes two crops in a year. The leaves when gathered are first laid together on heaps for some time and then hanged up by a thread run through them, in the shade until they are dry and then put up and kept, the longer the better. In this experience is the master."

This considerable cultivation sufficiently proves the popularity which Tobacco had attained during the century immediately following Hawkins and Raleigh's time. Notwithstanding its popularity, Tobacco had incurred the censure of James I.; see his famous "Counterblast to Tobacco." His dislike was shared by Cromwell, who sent troops to tread down fields, but the Parliamentary soldiers are said to have smoked at the Protector's funeral in order to celebrate their recovered liberty. In Charles II.'s time, Tobacco flourished at Winchcombe in the Vale of Evesham, but rather than collect excise duty the authorities preferred to abolish the English growth. They were prompted also by certain courtiers who desired a monopoly in the Virginian plantations. Pepys records that it was necessary to send down troops to destroy the Tobacco fields and, as in Ireland at a later date, an industry was deliberately wiped out of existence. Had matters been otherwise, by this time it would have developed such proper varieties, methods of cultivation and manufacture as would give it a suitable position in the general market.

In 1831, the Act permitting Tobacco to be grown in Scotland and Ireland was repealed, apparently on account of the difficulty of excise supervision. In 1886 and 1887, however, small trial plots were permitted in England, but the results were not encouraging, and Tobacco cultivation in this country may be accounted practically non-existent since the early days of the 19th century. An attempt made in 1883 to revive the industry failed, owing to incomplete knowledge of the best methods of managing the crop. Tobacco requires intensive and careful cultivation. The leaf intended for smoking must be very carefully blended. It is to be feared that the home industry has been prejudiced by popular distrust of British-grown Tobacco, a prejudice that may have arisen from successive failures to establish cultivation in these islands.

In 1907 the Act of 1831 was repealed and since that time it has been lawful to cultivate Tobacco in Ireland. With regard to prices for British Tobacco it is interesting to note that in 1626 eight ounces cost 5s., and in 1656 two ounces cost 1s. It would appear that in 1620 this country paid Spain £120,000 annually for

Tobacco. In 1907 the duty on Tobacco containing not less than 10 per cent. of water was 3s. per lb. Owing to an extension of the experiments in Ireland, the Chancellor of the Exchequer authorised a payment of 1s. per lb. to be refunded to the producer out of the duty paid on withdrawal from bond. The Tobacco on which this rebate could be claimed was limited to the produce of 50 acres. In 1908 the Chancellor of the Exchequer financed a five years' experiment, costing £6,000 a year, and this experiment was continued with Treasury assistance on the recommendation of the Development Commission.

The Finance Act of 1909-1910 removed, as far as England was concerned, the ban upon Tobacco cultivation, but in 1913 the rebate was withdrawn and during the Great War the duty gradually rose to 8s. 2d. on a 10 per cent. basis. In 1919 the present Chancellor of the Exchequer gave one-sixth of the duty to Empire production and a further 2d. excise allowance to the English product.

In 1911 Mr. A. V. Campbell, of the Rothamsted Laboratory, visited the Tobacco-growing centres of Ireland, Holland, Belgium, Germany, France and the United States. His report confirmed the opinion of the Development Commissioners that the question which requires settlement is not whether saleable Tobacco can be grown here, but whether it can be grown at a profit. The report states that an experiment should not be limited to one district and one kind of soil, but should be made on a fairly large scale, because economic cultivation cannot be carried out on less than 100 acres. Now that Tobacco growing in England has passed the experimental stage, trustworthy data are available as to the best districts, soil, plants to raise, manure and methods of curing.

The British Tobacco Growers' Society has carried out experiments in many parts of England and has proved that the crop can be grown successfully on the poorer soils of Norfolk and that Tobacco can take its place as a farm crop in the ordinary rotation. The Norfolk crops are looking well, and there are thirty-six acres well established in the district of which the Ministry of Agriculture's estate at Methwold is the centre. A further twenty acres are being cultivated at Fleet in Hampshire.

WHITE-FLOWERED HARDY PLANTS.

THE white hues of flowers sometimes produce a disquieting effect, perhaps never more so than when a single white-flowered plant gets into a combination otherwise quite free from white or cream. The effect is to arrest the sight, draw attention from the rest of the flowers and concentrate it almost wholly on the one plant among the many. But, apart from instances such as this, white flowers, if properly employed, are of great value in the garden.

At present our flower borders are furnished with some white-flowered plants of great beauty, and most of them not at all rare. There is the white form of *Galega officinalis*, quite a mass of soft whiteness. More charming still is the double variety of *Gypsophila panicula*, a shimmering, animated, lace-work of tiny flowers. This is one of the plants from which I trim the tops with a pair of shears late in June. This operation makes quite a different plant of it, stiff as it is possible for one of its habit to be, and keeping it from sprawling over neighbours less luxuriant than itself. Quite different in aspect, but equally pleasing, is the *Cimicifuga*, sometimes relegated to a place among shrubs, but, as it grows here, a valuable addition to the herbaceous border.

An altogether distinct effect is produced by the white variety of *Lychnis* (*Agrostemma*) *coronaria*, its grey white leafage harmonising so perfectly with the flat, white flowers. The crimson variety is also good, but, in my opinion, inferior to this. Though a biennial, many of the plants assume a perennial character, and as these flower liberally they are much to be preferred to biennial plants. The same remark

as to durability can be made concerning white Foxgloves, which live for many years, provided they are not allowed to bear seed; the removal of seed vessels allows the plants to continue producing side shoots long after the main flowering growth has been cut away. Although one must concede its value as a border plant, the Foxglove always seems most at home when springing up near the sheltering branches of some kindly shrub.

A good strain of white forms of *Lupinus polyphyllus* cannot be omitted from the garden without loss. These flower here for month after month, being induced to continue flower production uninterruptedly by the removal of all spikes before they have "flowered out," or, in a word, by preventing seeding. *L. polyphyllus* is, I think, the finest of all the *Lupinus*.



FIG. 40.—IRIS MRS. G. F. TINLEY.

The old bicolor, if a good form is chosen, is also of great value, and has flowers of good rose colour, but I could do without it rather than the white one.

Galtonia candicans, though not hardy here, I like to have in good quantity. It is absolutely distinct, almost as valuable a border plant as *Lilium candidum*, and better than many bulbous plants because it is never weakly. The ease with which it may be increased by seed-sowing is also in its favour. I have a group of it, along with *Anchusa Opal*, and certainly like it much better associated with blue than with red. I include almost all the white varieties of *Campanulas* among good border flowers, as they are very attractive and some are to be preferred to the blue types. I have, perhaps, missed some essential white plants, but I must not omit to mention a good strain of tall, white *Antirrhinum*. These are really first-rate, and I have never forgotten some large masses of them, the spikes quite six feet in height, I saw years ago associated with *Anchusa Dropmore*. R. P. Brotherston, Tynninghame Gardens, East Lothian.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Carnation Mimizan.—A very fine new Carnation was exhibited by Mr. N. F. Barnes, Eaton Hall Gardens, at the Wolverhampton Floral Fête on July 14, under the name of Mimizan, and was awarded a First Class Certificate on that occasion. It is a particularly strong-growing sport from the well-known variety Duchess of Westminster and resembles its parent in all but colour. The latter is somewhat difficult to describe, but I think deep, soft scarlet with rose pink shading on the reverse of the outer petals about meets the case. C. B.

[We have received a few handsome flowers of Carnation Mimizan from Mr. N. F. Barnes, The Gardens, Eaton Hall, Chester, and agree with our correspondent that it is a first-rate variety and of the colour described. Mr. Barnes informs us he has grown Mimizan for six years and it appears to be quite fixed.—Eds.]

Iris Mrs. G. F. Tinley.—The new variety of tall, bearded Iris named Mrs. G. F. Tinley was greatly admired during Iris time at Messrs. R. Wallace and Co.'s nurseries, Colchester. It is elegant, and appears to possess a fine constitution. The tall, many-flowered spikes (see Fig. 40) bear extra large, handsome blooms in which the broad falls are purplish violet, with a prominent orange beard, and the broad, beautifully arched standards a pleasing shade of deep lavender. When new varieties are being added to the Iris garden or Iris border, the variety Mrs. G. F. Tinley should be included. C. B.

Excessive Rainfall in July.—The persistence of wet days during July was unprecedented in the South Hants district, so far as my experiences goes. Up to the 9th of the month 4.23 inches of rain was recorded at Swanmore. Not one single dry day was registered. I have looked up the records for the past twenty-one years and find nothing to equal the amount of rainfall recorded for the first part of the past month. In 1894 the total rainfall for July was 5.56 inches, but even then seventeen dry days were registered. In July, 1888, 5.48 inches was recorded, with twelve dry days. During the past twelve years we have only had two years in which more than 1 inches was registered for the whole of the month: 1914, 4.01 inches; 1915, 5.12 inches, with 13 and 19 dry days respectively for the whole of the month. For farmers this continuous rainfall is very injurious, especially to their hay crops. Those who were fortunate to have their hay carted have, in the majority of instances, been unable to thatch the ricks. Owing to the succulent nature of the grass, consequent on abundant moisture previous to cutting, many ricks have become unduly warm, necessitating more time to evaporate the surplus moisture. The loss of what at one time looked like prime hay is a serious matter to many smallholders. The continued wet weather and low temperature are having injurious effects on cereals. Wheat, which promised such a bountiful crop, shows serious signs of rust in the "flag" at this critical period must militate against the swelling and maturing of the grain. Late-sown Barley, too, is affected in the same manner. Winter Oats, which have considerably increased in acreage, are much laid where the straw was heavy. This will seriously affect the yield and quality of the corn. Spring-sown Oats, where not exceptionally heavy, are revelling in the moisture. Weeds grow apace. The necessary work upon the fallows for next year's Wheat crop is sadly hampered, and especially is this the case on heavy land. I have never seen Potatoes with so much haulm as they now generally have. I regret to say that disease is already present in the leaves, and with a continuation of moist weather will doubtless spread rapidly. It may come as a surprise to some to learn that, although there is a huge quantity of grass, the yield of milk is diminishing considerably, which means that if the previous output is to be maintained from the same number of animals, artificial food, such as cake, must be given to supplement the poor quality grass. Those who make butter know quite well

how much weather affects the butter fat percentage of the milk, consequently there is less butter from the same quantity of milk. In gardens late-sown Peas are making unsatisfactory progress. Peas love sunshine, and this has been denied them of late. I never saw Sweet Peas so adversely affected as during this summer. Apple-trees are, however, revelling in the excess of moisture, and the trees are making extra strong, clean growth. *E. Molyneux.*

Galega Hartlandii.—It is now a good many years ago since the late Mr. W. Baylor Hartland, of Cork, sent me this Goat's Rue, which was then a novelty and was appreciated greatly because of its variegated foliage, which looked so pretty in spring and appealed even to those of us to whom variegated plants are not specially delightful. I believe botanists refer it to *G. patula*, but the distinctions between the Galegas are not always appreciable to the gardener. However that may be, *G. Hartlandii* is very pretty in summer and autumn after the leafage becomes nearly green, its lilac and white flowers in good racemes appealing to all, either when growing or when cut; and the bushes, some four feet or so tall, are quite elegant if not too stiffly tied. In my garden self-sown seedlings frequently develop, in spring, the variegated leaves of the original plant, but some of these seedlings have varied in colour, and I have now a good white variety which I like even better than the coloured ones. Anyhow, *G. Hartlandii* is a plant to be procured by the many who love a good, hardy, easily grown plant which will be effective over a considerable period. Here it has been in bloom all July, and in the first week of August gives promise of keeping in flower for a long time yet. It gives little trouble and is stiff enough to stand in sheltered places without a stake, although where there is much wind it is more prudent to give it a support which is not too visible, and to tie it up loosely. *S. Arnott.*

Shot Hole Fungus on Peach Trees.—During the past few weeks your advice has often been sought regarding the Shot-hole fungus which attacks Peach trees. I venture to place before your readers details concerning trees affected by this disease in the gardens here, last season, in the late Peach house, the attack was so serious, that long before the fruits on the latest trees were ripe, the trees were completely defoliated. I quite expected the growth would be so enfeebled this year that I should have to uproot the trees, but I am pleased to say there have been full crops on six trees, and only one tree has borne a crop below the average. The foliage showed a few signs of attack at the bases of the young shoots, but the spraying described below checked it and growth is unusually strong and vigorous, whilst the foliage is of a healthy, deep green colour. The treatment has been as follows:—While the trees were dormant I sprayed them with lime-sulphur (winter strength) and later, but before growth commenced, I sprayed them with a copper sulphate solution (winter strength). Remembering the advice given to students in the Garden Library at Kew, by the late Mrs. G. Massee, I avoided the error of syringing twice daily. Mrs. Massee always said that "A fungus spore cannot germinate in the absence of moisture, therefore I consider the absence of syringing a point of the utmost importance. Directly I noted the appearance of the disease in the spring I sprayed the trees with Gishurst Compound, to keep the foliage free from red spider and thrips. Later still, noticing more leaves affected, I sprayed the trees with a sulphide of potassium solution at the prescribed strength. Two further sprayings were given with Gishurst Compound, the last one just prior to the colouring of the fruit on the earliest trees. During the seven years I have had charge of these Peach trees, I have had splendid fruits, and I am hoping that next season, with a continuance of the treatment described, the disease will be completely eradicated. When tying the growths I have cut out a good many shoots that suffered badly from last year's attack, some of which were quite dead. *T. A. Summerfield, Alderley Park Gardens, Chelmsford.*

SOCIETIES.

ULSTER HORTICULTURAL.

JULY 29 and 30.—This Society held its annual show in the Belfast Botanic Gardens on the above date. The prospect of a good show was anything but good, the weather for weeks previously being sunless and cold, consequently the display was a great surprise to all who attended.

Roses were splendid, and the competition in the amateur classes was keen, the boxes being for the most part filled with flowers of fine size and colour. In the class for 24 Roses, distinct varieties, Mr. E. GODFREY BROWN led with a clean set, in which Mrs. Foley Hobbs, (Medal Bloom), George Dickson, Hugh Dickson, and Margaret Dickson Hammett were shown in fine form; Mr. J. H. WELSH, Londonderry, 2nd. Mr. Brown won most of the chief prizes offered for Roses. Other successful amateurs were Mr. W. H. CALVERT, Helen's Bay; Mr. F. J. DAVIS, Holywood; and Mr. D. D. REID.

For a collection of Sweet Peas arranged for effect Messrs. ALEX DICKSON AND SONS were winners of the 1st prize; this firm made a bright and bold display with masses of Hawmark Pink, Baisybud, Caress, Bridesmaid, Hawmark Moon, Annie Ireland, and Hawmark Cerise—a new variety which has received an Award of Merit from the National Sweet Pea Society. It is a variety of fine form and size, salmon cerise on cream ground. In the amateur classes for Sweet Peas Mr. E. COWDY won many 1st prizes, and in the class for 18 bunches he staged a grand lot of clean and bright flowers of Hawmark Pink, E. Cowdy, Daisybud, Elegance, John Porter, and Annie Ireland. The other leading prize-winners in Sweet Pea classes were: Mr. A. W. COWDY, Colonel SHARMAN CRAWFORD, Mr. THOS. SCOTT and Mrs. J. LOVE.

In the nurserymen's class for Roses, Messrs. HUGH DICKSON were the only exhibitors of a collection of Roses arranged for effect. They set up a fine display, which included some of the newer varieties, notably Mrs. H. Morse, J. G. Glassford, Mrs. Lindsay, and Mrs. S. K. Ringe, the latter a new yellow sort.

The classes for decorated dinner tables, three in number, produced a fine display as the competition was keen. Mrs. BROWN, Miss NELSON and Mrs. WHITE were the successful competitors for tables of Roses, mixed flowers and Sweet Peas respectively.

Trade exhibits were excellent. Messrs. ALEX DICKSON AND SONS surpassed themselves with a glorious display of Roses. There were pillars and vases of the best varieties, and many seedlings that have not yet been seen in London. There were also about 300 blooms in boxes as a finish to a grand exhibit. Lady Inchiquin, Elizabeth Cullen, and Sunstar, Hawmark Scarlet, and Frances Gaunt were a few of the outstanding varieties. Messrs. S. MCGREY AND SONS arranged an excellent stand of Roses wherein the varieties *Admiration* and *Una Wallace* attracted a great deal of attention.

Messrs. SMITH, of Newry, a firm famous throughout the world for hardy flowers, provided a display of new and scarce subjects.

The DONARD NURSERY COMPANY contributed a display of choice shrubs, and a fine lot of flowers of *Dierama pulcherrima*. Messrs. HAMILTON, Belfast, showed a collection of fruit, a capital lot of Carnations, and a group of stove and greenhouse plants.

WALLASEY HORTICULTURAL.

AUGUST 4.—The 27th annual exhibition. was held in the Central Park, Liscard, under most adverse conditions, rain falling during the whole of the day. This circumstance, coupled with the unfortunate disaster of last year, when the tent was blown down, has resulted in a great loss to the hospital funds and a disappointment to the energetic committee. The entries were hardly up to the average in point of numbers. In the open class for a miscellaneous table of plants and cut flowers, Mr. S. SALISBURY, Wallasey, won the Victory Challenge Trophy with a tasteful arrangement in which Sweet Peas were used to advantage; Mr. C. MORGAN,

Wallasey, 2nd. For the best stand of cut flowers, Messrs. BEES, LTD., Neston, won the premier award (the Society's Gold Medal) with, probably, the best exhibit ever staged at this show; fresh and bright Roses occupied a considerable space and were greatly admired, and to these were added a fine bank of hardy flowers of high merit, which would have been further enhanced if a little more space had been allowed. THE GARDEN SUPPLIES CO., Liverpool, won the Silver Medal offered as 2nd prize, and Mr. C. H. TAUDEVIN, Willaston, obtained a like award for a fine display of Carnations.

The successful competitors in the dinner table class were Mrs. BOND, Formby; Mrs. BAILEY, Liscard; and Mrs. WARRINER, who were placed as named. Mr. E. TOMLINSON, Ainsdale, had the best 12 vases of Sweet Peas and also the best 6 vases, being followed in each class by Mr. F. G. AINSLOW, Formby. Mr. H. WILLIAMSON, Great Saughall, led for 9 vases of cut herbaceous flowers with a handsome set, and Mr. W. BOND, Junr., Formby, took the lead for 6 Roses and for a bowl of Roses.

For the collection of six vegetables, Mr. J. GOLBOURNE, Formby, led with a good lot. For the best 6 kinds of vegetables from an allotment, Mr. A. CALVERT proved the victor. The produce from allotments was creditable throughout.

LOCKERBIE HORTICULTURAL.

Held in conjunction with the show of the Lockerbie Agricultural Society, on the 31st ult., the exhibition of the Lockerbie Horticultural Society was a decided success. The entries were considerably over 250. One feature which attracted a good deal of notice was the contest for the chief prize for the best decorated dinner table. Here the exhibits were of much excellence, and the winner was Miss J. W. MALCOLM AITKEN, Norwood, Lockerbie; Miss M. MARCHBANK, Murrayfield, coming 2nd; and Mrs. GRANT, Rosebank, 3rd. Another striking feature of the show was a splendid non-competitive exhibit from the gardens of Sir ROBERT W. BUCHANAN-JARDINE, Castle Milk, Lockerbie (gr. Mr. John Jeffrey), comprising a fine array of flowers and fruit.

In the open classes for cut flowers the number of exhibits was not large, but the quality was capital, especially among the Roses. The leading prize-winners were J. JARDINE-PATERSON, Esq., Balgray (gr. Mr. Jas. McDonald); Miss JARDINE, Dryfeholm (gr. Mr. Alex. Cameron); and Mr. J. G. GRANT, Rosebank. In the potted classes the same exhibitors carried off the principal first prizes, as they also did in the fruit section, where the exhibits were of high quality. In the vegetable classes the same competitors were also highly successful, but several amateurs won prizes, these including Mr. W. PROUDFOOT, Ruthwell; Mr. B. EDGAN, Wamphray; and Mrs. GRIERSON. The prizes in classes limited to amateurs were more keenly contested, and Mr. W. Proudfoot had the best collection of vegetables in this section.

SCOTTISH NATIONAL SWEET PEA, ROSE AND CARNATION.

THE first exhibition of this new Society was held in St. Andrew's Hall, Glasgow, on the 5th inst., and proved to be a most satisfactory function. The entries in the various classes were numerous, and the quality of the exhibits was distinctly high. Unfortunately, the weather prevailing for some time previous to the exhibition was unkind, and as a consequence many growers who had hoped to exhibit were unable to do so. Sweet Peas were the chief source of interest, and the cool conditions appeared to have favoured these flowers.

Mr. JAMES PAUL, of Killearn, was a very successful competitor in this section and won the Burpee Cup, offered for the best twelve vases of Sweet Peas, and also the Eckford Cup offered for the most meritorious exhibit in the Sweet Pea classes. He was also the 1st prize-winner in the class for nine vases of distinct varieties, and had the best set of six novelties. Mr. W. LANDRETH,

Collstream, had the best vase of Sweet Peas in the amateurs' section and showed the variety Alexander Malcolm. Mr. GEORGE BOWNESS, Busby, won the 1st prize for 18 bunches of Sweet Peas in the nurserymen's class. Mr. W. BROWN, Stewarton; Mr. W. RAE, Ayr; Mr. GEORGE REID, Dundee; and Mr. J. A. GRIGOR, were also very successful exhibitors of Sweet Peas.

In the Rose classes the Royal Polytechnic Cup, offered for the best 36 blooms, was won by Messrs. HUGH DICKSON, LTD., Belfast, with a very fine exhibit. Mr. JAMES KERR was a most successful exhibitor of 24 blooms, distinct varieties, while Messrs. JAMES FAIRLEY AND CO., Cairneyhill, Fife, contributed the best collection of cut Roses.

Messrs. HUGH DICKSON, LTD., won the 1st prize and Gold Medal for the best seedling Rose not yet in commerce, the variety being J. G. Glassford, a hybrid tea variety of rich, crimson, lake colour. The same firm won 2nd prize and another Gold Medal in the same class with the variety Mrs. James Williamson, which has shell pink flowers. Mrs. RUSSELL NEWTON-MEARNES was a successful exhibitor in several classes for Roses, and Mr. JAMES KERR was also a prize-winner in the Rose section.

Mr. DAVID TORRANCE, Darvel, showed the finest set of 6 vases of Carnations or Picotees, while in another class for 6 varieties Mr. JAMES SMITH, Darvel, was winner of the 1st prize.

Messrs. STORRIE AND STORRIE, Glencarse, had an interesting exhibit of 100 varieties of Sweet Peas arranged to show a system of colour classification worked out by Mr. Storrie. For these and for fruits the firm was awarded a Gold Medal. Messrs. AUSTIN AND M'ASLIN, Glasgow; Messrs. DOBBIE AND CO. Edinburgh; and Mr. J. HOUSTON, of Kilbirnie, were also exhibitors of non-competitive displays.

During the evening of the show day Mr. John Yuille presided at a conference at which a paper on the Cultivation of Sweet Peas in the United States, sent by Messrs. David Burpee, of Philadelphia, was read. Mr. Hugh Dickson read a paper on the cultivation of Roses, and Mr. Robert Morison, of North London, gave an address on the cultivation of border Carnations.

ROYAL HORTICULTURAL.

AUGUST 10.—The Royal Horticultural Hall, Vincent Square, Westminster, is in the hands of the cleaners and decorators, and where, on the occasion of the usual meetings, there are large groups of plants and flowers, there is now a forest of scaffolding.

Floral Committee.

Present: Messrs. H. B. May (in the chair), E. A. Bowles, John Green, Chas. Dixon, H. J. Jones, Chas. E. Pearson, John Heal, C. Fielder, W. Howe, W. P. Thomson, E. H. Jenkins, H. Cowley, F. Hanbury, J. Hudson, and A. Turner.

AWARDS OF MERIT.

Montbretia James Coey.—In this handsome variety the extreme of deep, rich colouring has been reached. The flowers are about four inches in diameter and of a deep orange vermillion colour, with yellow shading and a crimson blotch at the base of each segment. Shown by SYDNEY MORRIS, Esq., Earlham Hall, Norwich.

Montbretia Joan of Arc.—This is also a showy variety, its large and shapely flowers measuring 3½ inches in diameter. The colour is light yellowish apricot, with some faint, red markings in the "eye." Shown by SYDNEY MORRIS, Esq.

Gladiolus E. J. Shaylor.—A large flowered variety of deep rose pink colour tinted with salmon, and with deep red shading on the smaller, inner segments. Shown by MAJOR CHURCHER (gr. Mr. E. J. Shaylor), Alverstoke, Hampshire.

Gladiolus Mary Pickford.—A chaste and lovely variety. The flowers are of medium size and pure white, save for the pale, creamy shading on the lower inner segment. Shown by MAJOR CHURCHER.

Gladiolus Banner of Hope.—This large-flowered form has blooms of rather loose formation and not so widely expanded as are those of the G. princeps type. The pure white

flowers have small, creamy white inner segments, with a few violet lines. Shown by Messrs. J. KELWAY AND SON, Langport.

Gladiolus Duke of Bedford.—A large-flowered, handsome variety, the blooms being widely expanded and of excellent form. The colour is deep salmon-pink, splashed with deep scarlet, the smaller, inner segments being heavily shaded with scarlet on a creamy ground. Shown by Messrs. J. KELWAY AND SON.

Gladiolus Yellow Beauty.—A charming variety belonging to the increasingly numerous family of G. primulinus hybrids. It is a strong-growing sort with branching spikes on which the showy flowers are elegantly placed. The colour is light and clear sulphur yellow, the lower segments being deeper yellow, whilst every segment has a central line or lines of brighter and more golden yellow. Shown by Messrs. J. KELWAY AND SON.

Phlox Dr. Charcot.—A showy, free flowering variety of good habit. The flowers are of large size, bright mauve, with a white, radiating starry centre. Shown by Mr. H. J. JONES, Ryecroft Nursery, Lewisham.

Phlox H. J. Jones.—A handsome Phlox, with big trusses of bold, circular flowers. The colour is an attractive shade of rich orange salmon, with crimson eye. Shown by Mr. H. J. JONES.

Phlox Mrs. H. J. Jones.—This comparatively dwarf variety has large, rounded flowers of a clear, silvery rose-pink shade of colour that is enhanced by the deep red eye. Shown by Mr. H. J. JONES.

Orchid Committee.

Present:—Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. secretary), Frederick J. Hanbury, Pantia Ralli, Fred. K. Sander, Charles H. Curtis, Walter Cobb, and Arthur Dye.

Before the business of the Committee was commenced, Sir Harry J. Veitch spoke in feeling terms of the loss sustained by the death of Mr. Joseph Charlesworth, one of the oldest and cleverest of the Committee's members and to whom the Orchid lovers owed so much, especially as a result of his researches in Orchid hybridisation. The Committee unanimously desired that Sir Harry Veitch should send a letter of condolence with the relatives in their great loss.

AWARDS OF MERIT.

Vuytstekeara Mrs. Pitt (Odontonia Laelia Sander × Odontodia Charlesworthii) from H. T. PITT, Esq., Rosslyn, Stamford Hill (gr., Mr. Thurgood). A very complicated hybrid into which *Miltonia Warscewiczii* and *Cochlidia Noezliana* enter, with various *Odontoglossums*. The flower resembles a good *Odontoglossum* with vinous purple sepals and petals, a narrow yellow margin, and broad, cream-white lip blotched with purple. Remote as it is in the ancestry, the *Miltonia* brings very firm substance to the flower.

Laelio-Cattleya Bombardier (C. Adula × L. C. Geo. Woodhams), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr., Mr. E. J. Seymour). A very showy hybrid, in form an enlarged *C. Adula*, but in colour *C. Hardyana* predominates. Sepals and petals rosy-mauve; lip purplish-crimson, with yellow lines from the base, and medium yellow blotches derived from *C. Warscewiczii*.

Cattleya Diana majestica (C. Dowiana aurea × C. Sybil var. Lord Kitchener), from Messrs. HASSALL AND CO., Southgate. *C. Sybil (Dowiana × iridescens)* crossed again with *C. Dowiana* has resulted in a good flower nearest to the last-named in size and form, but of more compact habit. Sepals and petals broad, light canary yellow. Lip finely crimped and fringed, vinous purple with yellow disc.

OTHER EXHIBITS.

Messrs. HASSALL AND CO. showed *Cattleya Adula* var. *Dreadnought*, a very large and finely coloured form. A vote of thanks was passed to H. T. PITT, Esq., Rosslyn, Stamford Hill, for an interesting selection of rare and curious Orchids, including *Catasetum fimbriatum*, *Cynochus chlorochilon*, *C. Egertonianum viride*, *Bulbophyllum barbigerrum*, *Habon-*

aria rhodocheila, *Angraecum Scottianum*, *Masdevallia simula*, *Dendrobium ciliatum amnense*, and *Epidendrum umbellatum*.

Fruit and Vegetable Committee.

Present:—Messrs. Owen Thomas (in the chair), W. H. Divers, S. B. Dicks, F. J. Hanbury, and Sir Harry J. Veitch.

This Committee had before it two dishes of splendid Runner Beans shown by Mr. T. FOREMAN, The Hermitage Gardens, Hadlow. The variety was raised by crossing Carter's Red Giant with a seedling; the Committee considered it identical with Prizewinner.

RIPON HORTICULTURAL.

AUGUST 4.—The Ripon and District Horticultural Society held its 20th annual show in the grounds of Park House, on the above date. As a result of the continuous wet weather the attendance was very small. The Dean of Ripon opened the Show, and gave a short address, in which he said that few things were more elevating than the cultivation of flowers, as they associated the grower's thoughts with home. An excellent schedule was provided, but there was only a small entry with very limited competition, and, indeed, some classes, such as those for fruit, failed to secure one entry. In the classes for Sweet Peas the competition was good, and the blooms were very fine. Mrs. WHITE won the prize for the best vase of Sweet Peas. Other successful competitors in this section were Mrs. WILLIAMSON, Mr. H. DIXON, Major GROTRIAN and Mr. J. W. COTTAM. Vegetable exhibits were of very good quality, but competition was not keen. Mr. C. SHARP won the special prize for the best collection of vegetables. Other prize winners in the vegetable classes were Mr. T. BRANDRICK, Miss JENNINGS, Mr. R. C. CLAPHAM, Mrs. WILLIAMSON, Major GROTRIAN, Mr. F. VINCENT, and the Rev. L. B. MORRIS.

LAW NOTE.

IMPORTANT RULING IN REGARD TO OVERHANGING TREES.

Two points were made clear by Mr. Registrar Fox at the Croydon County Court recently, viz., (1) that an occupier has a right to cut overhanging branches of a neighbour's trees, (2) that the tenant and not the landlord is responsible for damage done by overhanging trees.

Richd. Wm. Rose, Olivet, 33, Stretton Road, Croydon, sued Alfred L. Carpenter, solicitor, of London and Carpenter, 31, Budge Row, E.C., for £2, damage caused by overhanging trees on the Cedars Property Estate.

Counsel for defendant raised the point that the person responsible for the overhanging trees was the tenant and not the landlord.

Plaintiff explained that the estate abutted on his property, and he had had a lot of trouble through overhanging trees. Damage had been caused to his garden. He had tried to get the matter amicably settled, and had negotiated with the tenant, Mrs. Sharp, who had now vacated the premises, but failed to get redress. She had, however, told him that the trustees who had to do with the matter were Messrs. London and Carpenter.

The Registrar pointed out that the landlord has no right over the trees, and has no right to go into the tenant's property and cut them. The tenant is responsible for any liability for damage by trees while he is in occupation.

A witness was called to say that the overhanging trees were detrimental to Mr. Rose's garden, and counsel suggested that the difficulty had always been because plaintiff wanted the whole tree removed. The action was ill-founded, he argued; defendant was not responsible for the condition of the trees, and the tenant who had been there since 1892 was the person to be sued if anybody was liable.

The Registrar said it was perfectly clear plaintiff could not possibly succeed in law, and there must be judgment for defendant.

ANSWERS TO CORRESPONDENTS.

ASTER PLANTS WITH BLACKENED STEMS: W. J. K.—All diseased plants should be lifted and burnt to prevent a spread of the disease, which is a form of *Phytophthora* not uncommonly found to attack Asters. Mycelium of this fungus was present in the diseased tissues. So far as we are aware, there is no method of saving plants so badly affected as those sent.

BETTER ON ASPARAGUS: D. In the absence of specimens we are unable to state what kind of beetle has damaged your Asparagus, but in all probability the culprit is the common Asparagus beetle (*Crioceris asparagi*). Syringe the growths with water in which a little soft soap has been dissolved, and afterwards dust the plants with unslaked lime or soot.

CAPER SPURGE: J. F. S.: The plant is *Euphorbia Lathyris*, popularly known as the Caper Bush. This species is found wild in many parts of the country, but there is some doubt as to whether it is a native or naturalised plant. It appears to have been generally cultivated in gardens in former years. The seeds are occasionally pickled and eaten as a substitute for Capers, but they are not wholesome. They are acrid and have caustic properties though no doubt these properties are greatly diminished after the seeds have been steeped in vinegar.

CRICKET BAT WILLOW: E. G. E. We suggest that you should write for particulars to Messrs. R. Veitch and Son, The Nurseries, Exeter.

CRINUM LEAVES DISCOLOURED: F. C. The discolouration of the foliage is probably due to an excess of water at the roots of the plants, or to a low temperature coupled with moist atmospheric conditions. No evidence of fungus could be found in the specimens received.

CUCUMBERS FAILING: E. W.: No evidence of disease could be found in the specimens and we are of opinion that the trouble is due to a low temperature coupled with an excess of atmospheric moisture, with consequent poor root action.

CULINARY AND SWEET PEAS DISEASED: J. C. D. Both the Sweet Peas and the Culinary Peas had the mycelium of some fungus, probably *Thielavia basicola*, in their roots. Botrytis was present on some of the leaves of the Sweet Peas. The soil in which the seeds are to be sown should be sterilised by adding commercial formalin at the rate of 1 pint of formalin to 12½ gallons of water, using ¾ gallon of the solution to a square foot of soil. After this treatment the soil should be covered with sacking for a couple of days to keep in the fumes of the formalin, and at least a week should elapse after treatment before sowing or planting is commenced.

GLOXINIAS FAILING: M. M. The material submitted was insufficient and unsuitable for the purpose of identifying the cause of the shrivelling of the leaves. It is quite possible that the trouble is due to some error in cultivation, and not to disease or insect pests. We cannot undertake to analyse soil. The test for lime content is easily carried out. Place some finely broken-up soil in a tin or jar and thoroughly wet it with a solution of hydrochloric acid and water, at the rate of one part of the former to two or three parts of water. If the mixture effervesces considerably, it is evident that the soil contains sufficient lime. If there is no reaction whatever the soil is lacking in lime.

GOOSEBERRY MILDEW: A. C. P. Your Gooseberry bushes are suffering from an attack of American Gooseberry Mildew, a disease which may spread with great rapidity to other plants. As this is a notifiable disease you should at once communicate with a representative of the Ministry of Agriculture. Failure to notify the presence of this disease will render you liable to a heavy fine.

INSECT PESTS OF FRUIT TREES: G. E. T. A useful and freely illustrated book which

deals with insect pests injurious to various kinds of fruits grown in this country, is "Insect and Other Allied Pests of Orchard, Bush and Hothouse Fruits, and Their Prevention and Treatment," by Fred V. Theobald; published by the author, Wye Court, Wye, Kent.

INSPECTION OF MARKET GARDENS: J. L. You have no legal power to prevent a Government Inspector from inspecting your garden, but if you consider he may convey some disease to your grounds from a garden previously inspected, you should mention the matter to him. We do not think your point is of very great importance, but if you think it is, we suggest you communicate with the Ministry of Agriculture.

KINDS AND VARIETIES OF FLOWERS: J. S. If the class specification is "twelve kinds of cut flowers," without any further stipulation, you could not be disqualified if you exhibited several varieties in a bunch of any one particular kind. If, however, the schedule requires "twelve kinds, distinct," it is obvious that if several varieties of each kind are shown, the distinctness is somewhat reduced, although, as before stated, it should not lead to disqualification. It is invariably a good plan to keep as closely as possible to schedule specifications that are not clear.

MANURE CONTAINING WOOD CHIPS: A. F. Manure obtained from stables where wood chips are used for bedding horses is not desirable for use in gardens, because the chips are almost certain to become infected with fungi. Such manure may not prove injurious to crops, but some risk would be run if it were used.

MARROWS FAILING: J. E. H. The collapse of the Marrow plants is probably due to the excessive use of rank manure in the soil, together with the continuance of cold wet weather. It should be remembered that Marrows, Gourds, and Pumpkins, are natives of warmer climates than ours. No evidence of fungous disease was found in the specimens received.

MELON PLANTS WILTING: L. K. As no specimen was enclosed it was not possible to identify the pest with certainty. From the description given, however, the trouble is not due to eelworm. If specimens of injured roots are sent we will endeavour to identify the trouble. It may be that there is a fungus attack, and the grubs quite a secondary consideration.

MUSCAT GRAPES SPOTTED: A. B. The large dark spots on the fruits of Muscat of Alexandria Grapes are caused by the Grape Bot fungus (*Gloeosporium ampelophagum*). This disease is very difficult to combat successfully. Your best plan will be to dust the affected parts with flowers of sulphur at intervals of not less than ten days, so long as the disease continues to spread. A small quantity of quick-lime should be mixed with the sulphur on the second application, and the amount increased at successive applications until the lime almost, but not quite, equals the amount of sulphur used. When the vines are resting during the winter, drench the rods and branches with a solution of sulphate of iron.

NAMES OF PLANTS: F. R. G. We regret we cannot undertake to name florists' varieties of Roses: if you send specimens to the nurseryman from whom you bought the plants, doubtless he will name them for you. *G. H. 1*, *Anaphalis margaritacea*; 2 *Spiraea Bumalda* var. *Anthony Waterer*; 3 *Buddleia variabilis*. —*J. F. S. 1*, *Lysimachia vulgaris*; 2, *Euphorbia Lathyris*.

ONION FLY: J. H. The Onion Fly (*Phorbia cepetorum*) is the cause of the failure of the Onions. Carefully remove and burn all diseased plants and sprinkle soot around the unaffected ones as a preventive measure. No parasite was present in the specimen of Sweet Peas.

ROYAL HORTICULTURAL SOCIETY'S EXAMINATIONS IN HORTICULTURE. J. S. J. and H. S.:

Full particulars with regard to all the examinations in horticulture held by the R.H.S. can be obtained on application to the Secretary of the Society, Vincent Square, Westminster, London. A stamped, addressed envelope should be sent with the enquiry.

SHOT-HOLE FUNGUS ON PEACH TREES. A. C., J. W. and A. H. F.: No doubt you will have already seen our replies on this subject to other correspondents, in our issue for August 7, p. 78.

TOMATO LEAVES DISEASES: J. M. *Cladosporium fulvum* (Tomato rust) is the cause of the discoloured and diseased foliage. Plants should be sprayed with Bordeaux mixture or a solution of potassium sulphide during their early stages of growth, as a preventive measure.

TOMATO ROT. A. E.: The discoloration of the Tomato fruits is due to the presence of a fungous disease known as *Macrosporium* tomato. The diseased parts should be burnt and the plants sprayed at frequent intervals with a solution of potassium sulphide. An excess of moisture at the roots or in the atmosphere will cause the fruits to crack and thus render them peculiarly susceptible to this disease.

WHITE FLY ON TOMATOS. J. C.: The only satisfactory method of dealing with an infestation of White Fly appears to be fumigating or cyaniding the house where the Tomatos are grown at intervals of about a week.

Communications Received.—G. R.—A. L.—Q. P.—G. J.—N. W. H.—J. P.—S. L.—J. C.—T. P.—F. J.—J. F.—E. E. S.—S. S. E.—E. S. S.—A. H. L.—A. W.—A. G.—A. D.—F. S.—P. R.—S. L.—J. C.—H. W.—T. P.—W. A. J.—J. S. M.—T. F.

THE WEATHER.

THE WEATHER IN JULY.

The south-westerly winds, which have, to so remarkable an extent dominated the weather of this country since the beginning of last winter, were greatly in evidence during July, being, at the Southport Observatory, nearly three times more prevalent than usual, and rendering the month extremely wet, and the dullest July on record. Temperature was, as a consequence, very equable, and the daytime exceptionally cool, the maximum thermometer on no occasion rising above 66°. The air was humid, the ground-water level abnormally high, and the amount of evaporation the smallest yet measured for the month. Owing, however, to the cloudy nights, the mean temperature was not more than 2.9° below the 45 years' average.

The duration of sunshine was only 127.4 hours, or no fewer than 81.3 hours below the normal. Rain fell on 24 days, or nine more than usual, and the total amounted to 4.73 inches, or 1.68 inches above 45 years' average. At several stations a few miles away, the fall reached six inches, and on high ground, more. A peculiarity of the month was the winter-character of the rains, their total duration being 102.3 hours, whilst the highest previous record for July was only 70.4 hours (in 1909). The heavy rainfalls of former wet Julys were due to thunderstorms; but this time thunder occurred only on two days, and those were not wet days. Barometric pressure has several times been lower: but as regards wind direction, and general weather, one has to go back to the year 1871 to find a similar July. The destruction of insect life has been enormous.—*Joseph Baxendell, Borough Meteorologist, Fernley Observatory, Southport.*

THE WEATHER IN SCOTLAND.

July was a cold month, with a mean temperature fully 3° below the normal. The rainfall differed little from the average, while the hours of bright sunshine showed a considerable deficit. Rain fell on 23 days, of which 14 were official "rain days," the total amount of rain collected being 2.55 inches. The wettest day was the 18th, with 0.59 inch. Varying from a highest of 30.20 inches on the 4th to a lowest of 29.35 inches on the 23rd, the mean barometric pressure was 29.78 inches. The highest maximum temperature was 67° on the 20th, and the lowest minimum 37° on the 4th, while the lowest maximum of 59° was registered on the 1st and 9th, and the highest minimum of 52° on the 11th and 15th; the mean maximum was 63° and the mean minimum 47°. From these figures we get a mean temperature for the month of 55°, a mean range of 16°, and an absolute range of 30°. On the grass the mean minimum was 42°, with a lowest of 29° on the 4th. This date was the only night on which there was ground frost. At 1 ft. deep the soil temperature was practically constant at 57°. The relative humidity of the air worked out at 75 per cent. There were no gales during the month, and the prevailing winds were south westerly.—*James Malloch, Director of Studies, Meteorological Station, St. Andrew's Provincial Committee, Training College Gardens, Kirkton of Mainie, near Dundee.*

THE Gardeners' Chronicle

No. 1756.—SATURDAY, AUGUST 21, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 60.7°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, August 18, 10 a.m.: Bar. 29.7. temp. 66°. Weather—Dull.

White Rot of Onions.

The Onion, although when well grown a valuable and important crop, is peculiarly liable to disease, and hence the rather low average yield in this country. In addition to Mildew, which has always been a plague to Onion growers, and Onion Fly, the maggots of which set up a bulb rot, the Onion is subject to another mildew-like disease, known as White Rot, and in Bedfordshire as Mouldy Nose. This disease, which affects both autumn and spring-grown plants, has only recently been described in this country, but is, nevertheless, wide-spread in gardens and allotments. Gardeners should therefore keep a sharp look-out for its appearance and do all that is possible to eradicate it before it gets a firm hold in the garden. For once established in the soil it persists for at least three or four, and probably many more years, and no known means suffice to eradicate it. From the most recent accounts of White Rot* it appears that the fungus which causes this disease, after it has destroyed the bulb forms small, black, resting bodies or sclerotia which, after the bulb has rotted, lie in the soil, remaining dormant until spring when they form spawn (mycelium), which attacks the young Onion plants. So far as is known, no spores are formed by the fungus, and hence the only sources of infection of the soil are either diseased sets or manure contaminated with diseased remains of plants grown in infected land. A first outbreak is therefore generally sporadic and under garden cultivation should be easily recognised and the diseased plants pulled up and burned.

The symptoms of White Rot disease are a wilting and yellowing of the leaves; first the older and then the younger ones turn yellow, fall over and collapse. These symptoms appear in May or June. On pulling infected plants it is found that they come readily away from the soil—owing to the fact that the roots which are first attacked have been in large measure destroyed by the fungus. In warm, moist weather the fungus develops rapidly, its mycelium forming a white, fluffy mass around the base of the bulb. The whiteness and position of this mycelium serve to distinguish White Rot from other Onion diseases; for instance, the much-dreaded Onion Mildew, which occurs on the leaves, is grey or whitish lilac in colour. In its later stage also White Rot is recognisable by reason of the numerous black sclerotia, looking like Poppy seed, which occur on the surface of the bulb. Both in size and shape the sclerotia produced by the Onion Mildew fungus differ from those of White Rot fungus, for the former are large and flat, whereas the latter are small and rounded. Since the fungus harbours in the soil, and since no varieties of Onions appear capable of resisting its attack, ground heavily attacked should not be planted with Onions for at least several years. Leeks are rarely attacked and may therefore be substituted for Onions in diseased soil, and Shallots are also resistant to the disease. But it would be better to use for Onion growing a part of the garden as far removed as possible from the infected soil and to sow on the latter crops which are unaffected by this pest.

Horticulture at Ruhleben Camp.

The Journal of the R.H.S. Gardens Club No. XII., contains as a sad preface, the names of 19 former members who fell in the war, and scrutiny of the list shows how severe has been the loss of young men of promise. An article on the Ruhleben Horticultural Society, by Francis V. Derbyshire, is also sadly reminiscent of the war. This Society, which owes its origin to the indomitable spirit of the interned soldiers was affiliated with the R.H.S. in December, 1916, and received from the mother Society stocks of seeds wherewith it was able to establish its garden. As a result of the establishment of the Ruhleben Society, those interned in the camp were able to obtain fresh vegetables at nominal prices at times when the inhabitants of Berlin could not get them for love or money. The Society was, moreover, able to mitigate the dreary monotony of the camp by planting flower beds throughout its extent. Although the soil was not promising and manure was unobtainable, clearing and trenching produced a medium in which plants were made to flourish remarkably well. Bulbs from England and ornamental shrubs and trees were planted; a greenhouse made from packing cases was erected and used for Tomato growing and, wonderful to relate, a rack garden was constructed from lumps of limestone, unearthed during clearing operations. Mr. Derbyshire's story shows how well the gardeners did their work. A lack of manure was made good by digging and it was found that at some four or five feet down there existed a layer of black peaty soil, which was promptly brought to the surface. The area under cultivation appears to have been more than five and a half acres, and in one year vegetables were raised which realised about £500. Stocks of bees were introduced and the life history of the bee studied. During

the winter, fortnightly lectures were given on such subjects as fungus pests, soils, Alpines, cultivation of Peaches, Melons, etc. Two flower shows were held; a spring show for flowering bulbs and foliage plants, and a summer show in which vegetables occupied a conspicuous place. Mr. Derbyshire's brief account of horticulture at Ruhleben deserves to be read by every gardener and is one of which gardeners have a right to be proud. The resource exhibited may be judged from the facts that the garden workshop was constructed mainly of condensed milk packing cases, roofed with the tin linings of biscuit crates and floored with the ends of corned beef tins. Greenhouse extension was provided by means of tobacco boxes, and brickwork for the boiler-house and pits was constructed from bricks picked up in the camp.

Proposed Scottish National Diploma for Practical Gardeners.—In order to devise a method to enable the practical gardener to obtain some "hall mark" which would differentiate him from the mere garden worker, or garden labourer, and at the same time put him on a more equal footing, from the educational point of view, with his more favoured competitor in the profession—the college-trained horticultural student—Mr. David Storrie, invited representatives of most of the principal horticultural societies in Scotland to attend a conference at the Glencarse Nurseries, in July last. Mr. D. Storrie occupied the chair, and explained that the object of the meeting was to endeavour to evolve some scheme by which the working gardener, after passing a suitable test of his practical experience, could obtain a Certificate or Diploma. There was a free interchange of views, and it was agreed that another meeting he held, the locus suggested being Glasgow, and a provisional committee was appointed, with Mr. H. M. Mackie, C.A., the Secretary of the Glasgow and West of Scotland Horticultural Society, as Interim Secretary. This further meeting was held at Glasgow on August 4, and those invited to attend were requested to consider the following proposal made at Glencarse, namely, "To take steps to form a Federation of Scottish Horticultural Societies to be called 'The Scottish National Horticultural Association,'" and that "the primary reasons for the formation of such an association should be for the purpose of: (a) promoting and establishing some means of Horticultural Education in Scotland; (b) the forming of a Scottish Diploma in Horticulture to be granted by that Association." Mr. David King, one of the vice-presidents of the Royal Caledonian Horticultural Society, was nominated chairman, and there was a good representation from the various societies; Mr. Alex. McCullum, of the Board of Agriculture for Scotland was also present. There was again a free exchange of opinion most of those who expressed their views on the matter being in favour of the proposal. Owing to lack of time, however, nothing definite was arrived at, and on the motion of Mr. A. D. Richardson, the Secretary of the Scottish Horticultural Association, it was agreed to adjourn the meeting to September 8, the date of the Royal Caledonian Horticultural Society's autumn show, as all the societies represented had not yet had the question before them, and their representatives had no mandate to act for them. Mr. Richardson also expressed the opinion that it would be a great mistake to form a new body, such as was proposed, and that the machinery through which the suggested Diploma should be granted should be the Royal Caledonian Horticultural Society, the premier national horticultural society in Scotland, with, perhaps, an advisory or consultative committee, composed of representatives from the various horticultural societies in Scotland, who would meet periodically to advise with the Council as to alterations or improvements in connection with the granting of the Diploma, and other matters relevant to the movement.

* Journal of Ministry of Agriculture, 1920 pp. 1093-1099, and Leaflet No. 345.

Principal Crops in the Philippine Islands.—

The six principal crops cultivated in the Philippine Islands occupy nearly seven and one-half million acres, this being about one-tenth of the whole area of the islands. These crops are, in hectares (1 hectare equals 2.47 acres); Rice, 1,381,339; Cocoanuts, 373,251; Sugar cane, 200,199; Abaca, 615,563; Corn, 430,715; Tobacco, 73,859; Maguey, 23,465; Cocoa (estimated), 1,158, and Coffee (estimated), 773. The area under cultivation in fruit trees, Bananas, Camotes, Ubi, Gabe and other vegetables is not included in these figures because complete statistics for those crops are not available.

Ecclesiastical Tithe Rent Charge (Rates) Act, 1920.—

This Act received the Royal Assent on the 4th instant. The Ministry of Health has issued to Town Councils, Urban District Councils, and Overseers, a Circular letter enclosing copies of a memorandum with respect to the provisions of the Act and of the Order of the Minister of Health, prescribing a form of statutory declaration as to income, to be made by any incumbent who desires to claim under the Act exemption from rates on the ground that the total income arising from the benefice does not exceed £300, or an abatement on the ground that it is between £200 and £500. The Circular and the Memorandum, Order, and Regulations referred to in it will be placed on sale, and copies may shortly be obtained either directly or through any bookseller, from His Majesty's Stationery Office at Imperial House, Kingsway, London, W.C. 2; 28, Abingdon Street, London, S.W. 1; 37, Peter Street, Manchester; and 1, St. Andrew's Crescent, Cardiff. Forms of statutory declaration for the use of incumbents will no doubt be printed by various local Government publishers, and will shortly be purchasable from them. It should, however, be clearly understood that they will not be supplied by His Majesty's Stationery Office, or any other Government Department.

Sulphate of Ammonia as a Weed Killer.—The prevalence of Corn Crowfoot or Corn Buttercup (*Ranunculus arvensis*) among autumn sown cereal crops in Worcestershire this year led to trials being organised in the county by the Agricultural Organiser (Mr. R. C. Gault). In some instances the seedlings of the weed have become so dense (hundreds to the square yard) that the rotation crop has been practically ruined. The weed is an annual, with leaves divided more or less into narrow segments, flowers pale yellow, about half-an-inch in diameter, and fruits covered with hooked spines. Essentially a plant of the strong arable soils, the Corn Buttercup is rarely met with on light lands. A crop of winter Oats was sprayed with solutions of sulphate of ammonia of three different strengths, viz., 1 cwt., 1½ cwt., and 2 cwt. respectively in 60 gallons of water, per acre. The ordinary commercial material was used, and in all these proportions it dissolved very quickly in cold water. Spraying was done on March 19, and the fine weather which prevailed till March 24 probably contributed to the success of the experiment. By the end of April, where the most concentrated solution was used, 75 per cent. of the Corn Crowfoot had been killed and about 20 per cent. crippled; where the medium strength solution was used 50 per cent. of the Corn Crowfoot was killed and about 20 per cent. crippled; with the weakest solution the results were small as regards practical utility except for the improvement in the Oats brought about by the nitrogenous dressing. A similar trial was carried out later in the year on Corn Spurrey (*Spergula arvensis*). The weed was very advanced in growth, being fully 18 inches high, in full flower, and covering the ground thickly. Spraying was done with similar solutions on June 25 in very dull weather; rain fell for about one hour on June 26, and a considerable quantity on the evening of June 27. The effect of all the dressings in such unsatisfactory weather was surprising. Three days after spraying, the tops of the plants were limp and the leaves had already turned brown. The result was sufficient to show that, even at the rate of 1 cwt. per acre a solution of sul-

phate of ammonia would readily exterminate a crop of seedling Corn Spurrey. Caution must be observed as to the crop on which the sulphate of ammonia spray is used. It should only be used where the rotation crop is corn, such as Wheat and Oats (and possibly Barley and Rye); it will very possibly kill, or seriously damage, Peas, Beans, Vetches, Clover, and Potatoes. It must not be used where the corn crop has been "seeded out" or the Clover will be killed. Fine calm weather is essential to success, the field should be uniformly sprayed, and the nozzles deflected downwards, and not outwards, in order to wet the weeds where they are partially sheltered by the corn. Finally, except for the labour of carting water, the application of sulphate of ammonia in solution to corn crops provides an excellent method of making the best use of the fertiliser.

Clerodendron unguandense at Kew.—*Clerodendron unguandense* is now flowering freely in No. 4 Greenhouse at Kew, where it is growing freely, planted out, and trained to wires under the roof-glass. It also makes a good pillar plant or free-growing bush planted out in a bed or



THE LATE JOHN GILBERT BAKER, F.R.S.

(See Obituary Notice.)

border. Blue-flowered plants are always popular, and *C. unguandense* is always admired when in bloom. Blue colouring is unusual in the genus *Clerodendron*, the only other species of this hue in cultivation being *Clerodendron* or *Cyclonema myricoides*, which has very poor colouring when compared with the species under notice. *C. unguandense* was originally raised from seeds sent to Kew in 1906 by Mr. M. T. Dawe, who collected them in Voi, Uganda, at 2,000 ft. above sea-level. The plant grows and flowers freely in an ordinary greenhouse, and is easily propagated at any time by means of cuttings.

New President of the French Chrysanthemum Society.—The announcement that M. René Momméja, an enthusiastic amateur Chrysanthemum grower, has been elected to fill the place of President of the French Chrysanthemum Society, made vacant by the death of the late M. Max. de la Rochetère, will please many members and friends of the Society. For many years M. Momméja has devoted his leisure to the "Golden Flower." As a grower and exhibitor at the Paris shows he has won great success, but in addition to being a cultivator, M. Momméja is a collector of all kinds of bibliographical, literary, artistic, and other matters connected with the Chrysanthemum.

At the Retrospective Chrysanthemum Show, held in Paris in 1908, he exhibited his collection of rarities, which attracted considerable interest on account of the many Chrysanthemum curiosities he staged. He was supported in this by our old correspondent, Mr. Harman Payne, who sent over some curiosities of a similar kind; each exhibitor, it will be remembered, was awarded a silver plaque for his exhibit. M. Momméja, like his English colleague, has been a voluminous contributor to the French horticultural press on many subjects connected with the Chrysanthemum, historical, literary, and cultural. He is also the author of a brochure reprinted from the *Journal of the Franco-Japanese Society of Paris* on "The Chrysanthemum in Japan." The choice of a Parisian to fill the Presidency of a society in Lyons is in itself a great proof of the high esteem in which M. Momméja is held, and we hope he may live for many years to fill the position for which he is pre-eminently fitted. The new President is a business man, and engaged in the financial world.

Appointments for the Ensuing Week.—Tuesday, August 24:—Royal Horticultural Society's Committees meet Wednesday, August 25:—Bigger Horticultural Society's Show; Callander Horticultural Society's Show; Lanark Society's Show. Thursday, August 26:—Oxford Horticultural Society's Show; Sandy District Floral and Horticultural Society's Annual Exhibition; Ayton Society's Show; Royal Botanic Society Committee Meeting; Peebles Society's Show. Friday, August 27:—Holytown Society's Show; Motherwell Society's Show; Newmains Society's Show; Stranraer Society's Show; Thurso Society's Show. Saturday, August 28:—Dumfries and District Horticultural Society's Show; Tullibody and Cambus Society's Show; Tarbolton Society's Show; Swinton Society's Show; Duns Society's Show; Symington Society's Show (Lanarkshire); Milngavie Society's Show; Lochgelly Society's Show; Inverkip and Wemyss Bay Society's Show; New Victoria Society's Show (Shields); Craigbank Society's Show (Possilpark); Cathcart and District Society's Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—Disease of Potatoes.—A fatal malady has broken out among the Potato crop. On all sides we hear of the destruction that has overtaken this valuable product, excepting in the north of England. In Belgium the fields are said to have been entirely desolated. There is hardly a sound sample in Covent Garden Market. In fact, the murrain seems to have been transferred from cattle to Potatoes. As to cure for this distemper, there is none. One of our correspondents is angry at our not telling the public how to stop it, but he ought to consider that man has no power to arrest the dispensations of Providence. We are visited by a great calamity, which we must bear. At the same time, although it is not within human means to alter the course of the seasons or to prevent the maladies attendant on them, yet prudence may perhaps suggest some alleviation of the evil. Should we have fine weather the disease will probably disappear; should rain and cold continue, it will spread. In the latter case, the only thing to be done will be to dig up the crop immediately. Much loss will be thus sustained and the quality of late Potatoes will be bad, but the loss will be less than to let the Potatoes rot in the cold ground, and we conceive that some of the crop will be eatable, though not what could be wished. We find that in some districts the haulm has been mowed down by way of stopping the mischief, and this may be judicious as a temporary expedient, but we fear that no real advantage can be expected from any other course than digging up, drying and sorting over the produce. Although the Potatoes taken up thus early will suffer in quality from their unripeness, yet even this evil may be partially remedied by putting them in heaps consisting of alternate layers of dry earth and tubers. In such a situation it is probable that no further decay will take place, and it is certain that the ripening process will continue to proceed, although less effectively than under natural circumstances. *Gard. Chron.*, August 23, 1845.

NOTICES OF BOOKS.

New Zealand Plants*

About ten years ago we noticed the appearance of the first edition of this charming little book in which the author describes and illustrates the flora and vegetation of New Zealand in a most attractive manner, treating the subject mainly from the oecological standpoint. Beginning with a rapid sketch of the history of botanical discovery, and the principal actors therein, he gives special prominence to the Rev. William Colenso and Sir Joseph Hooker, giving their portraits. The former he designates the most celebrated New Zealand botanical explorer—a well-deserved appreciation. In the author's own words, "the book was primarily prepared for the non-scientific reader." This second edition is virtually a new book, but the untechnical character is preserved. The subject matter has been rearranged, and so much additional information added, that a far more connected account of the vegetation is presented. The book now appears as Manual No. 1 of the New Zealand Board of Science and Art. The illustrations are remarkable for their clearness and beautiful execution. A few examples may be cited:—Tussocks of the sub-antarctic *Poa litorosa* growing in wet ground on the outskirts of the *Olearia Lyallii* scrub-forest of Ewing Island (Lord Auckland Islands); *Griselinia littoralis* is shown in a very different form from that familiar to us in this country; it is one of those plants of which the seeds germinate in the crown of tall trees, sending down stout roots which enter the soil and eventually strangle the tree on which it has vegetated. Among other noteworthy pictures are:—General view of the Rakaia river bed at an altitude of some 2,800 ft., *Celmisia Armstrongii*, the Coral Shrub, the Bog Cushion, *Gaimardia ciliata*, a breathing root of *Laurelia Novae-Zelandiae*, and a penguinery in the Snares Islands, a very dense crowd of thousands of penguins with a background of scrub-forest giving an idea of the destructive character of these birds. Teachers of botany will find this book a great help. W. B. H.

THE BULB GARDEN.

LILIAM FARRER'S SP. 316; SYN. L. BROWNII VAR. KANSUENSE.

THE splendid Lily which gained a First-Class Certificate at the R.H.S. meeting on July 27, is not, I am now told on very good authority, *Lilium Brownii kansuense*, under which name I put it before the Floral Committee. It is the Lily F.316, which Mr. Farrer collected, and if I remember rightly, he suggested in his book, *On the Eaves of the World*, that it might be *L. Brownii kansuense*, and it was on this authority that I used the name. As the authorities have decided what this fine plant is not, it is much to be hoped that they will now decide what it is, or, if it is an entirely new and hitherto unnamed form, that they will hasten to give it decent baptism. It is too good a plant to be permitted to labour under a number like any criminal. In the meantime I think it only right to make public confession of the error I made. The plant which gained the F.C.C. is *Lilium* species F.316, wrongly named by me *L. Brownii kansuense*, and I wish to stop the error before it spreads further. Directly the true name is forthcoming I trust due record will be made in the archives of the R.H.S. Floral Committee.

Perhaps it will interest gardening folk if I record my experience with this superb Lily. In 1915 I received a minute seedling bulb about the size of a Pea seed, in a thumb pot. Foreseeing a bad time ahead for plants, I planted it out in the one place of all others which I knew would receive whatever little attention might be available under war condi-

tions—a small rock garden of limestone rocks and clippings, on to which go many new and choice plants on probation for hardiness. I chose this spot, not because I thought it culturally suitable, but solely because I knew it might receive attention there. It thrived amazingly and flowered for the third time this season, producing its finest spike. It came up looking like a cigar—one of the more expensive brands—and rushed into bloom, producing eighteen immense flowers, flushed outside with chocolate purplish-brown, and inside with soft citron yellow. The plant looks quite ridiculous towering gigantically out of the tiny moraine garden, yet it seems so well suited that I hesitate to move it. The ground from which it grows slopes slightly to the east, and is shaded from eastern sun by a shed. Hitherto this specimen has remained childless. No seeds have set, and no side shoots have been produced. But the species has seeded elsewhere, and thanks to the most generous gardener in the country, I have a batch of bulbets coming along quite prosperously. Farrer's *Lilium* sp.316 promises to be a first-class garden plant. *Clarence Elliott, Stevenage.*

twenty years ago, was distinct enough to be separated from the allied *C. bicolor* or not. *Cattleya Grossii*, as sent by Mr. Hanbury, is very different from typical *C. bicolor* in form and colour, the labellum especially being broader, with a greater expansion of the front-lobe, and quite different in colour. The sepals and petals are light purplish chocolate, with a slight indication of small darker spotting when held up to the light. The lip, which is broader at the base than in *C. bicolor*, and expanded to two inches in front, is soft, rose-pink, changing to purple from the base towards the central white band. The fleshy column is white, with a pale rose flush at the back.

CATTLEYA ORPHEUS.

THIS very pretty and distinct novelty, raised between *C. Grossii* and *C. Hardyana* by Frederick J. Hanbury, Esq., Brockhurst, East Grinstead, conclusively proves the distinctness of *C. Grossii*, by handing on its characteristics in an intensified form and producing a flower which cannot be confused with any form of *C. Adula* (*bicolor* × *Hardyana*), variable as that hybrid is. In *C. Orpheus*, the



FIG. 41.—FAENONIA DELAVAYI; STAR-SHAPED FORM OF FLOWER (SEE P. 97).

ORCHID NOTES AND GLEANINGS.

MILTONIA HYEANA FASEY'S VARIETY.

THE pretty class of *Miltonia* raised between *M. Bleuana* and *M. vexillaria Memoria G. D. Owen*, of which a fine display was made by the late Jules Hye de Crom at the Ghent Quinquennial Show in 1913, and who, in the previous year, had obtained a First-Class Certificate for a form of it at the Holland House Show, has always been in favour. Flowers of one of the best forms are sent by W. R. Fasey, Esq., Holly Bush Hill, Snaresbrook (Orchid grower, Mr. Seymour). The large and finely formed flowers are clear white with a pale mauve shade at the bases of the petals, the lip having a broad triangular mask at the base, of a dark maroon colour, strongly contrasting with the pure white of the rest of the flower.

CATTLEYA GROSSII.

FREDERICK J. HANBURY, Esq., Brockhurst, East Grinstead, sends flowers of two *Cattleya* of special interest in that they have a bearing on the debated point as to whether *Cattleya Grossii*, of which a small collection was imported from Brazil by Messrs. Low and Co.

ascending tendency of the petals, and the broad fronted lip, without developed side lobes, are as in *C. Grossii*. The sepals and petals are reddish mauve, with a slight green shade, the lip violet, changing to purple towards the central white band, which extends to the base. The column is white, tinged with purple.

BIFRENARIA HARRISONAE.

THE genus *Bifrenaria* is not a popular one, but it is occasionally represented in collections by *B. Harrisonae*. Plants of this species should be repotted when roots appear at the base of the new growth. The receptacles should be provided with ample drainage material, covered with a layer of *Sphagnum*-moss. A suitable compost, which should be made tolerably firm, consists of *Osmunda* fibre, with a small amount of *Sphagnum*-moss. Once the plants are established they need a fair supply of water, but when at rest the compost should be kept on the dry side. A position near the roof glass of the *Cattleya* or intermediate house should be provided for plants of this species. *Bifrenaria Harrisonae* is an old species, introduced about a hundred years ago; it was named in compliment to Mrs. Harrison, of Aigburth, Liverpool, and is figured in *Bot. Mag.*, t. 2927. T. B.

* *New Zealand Plants and their Story*. By L. Cockayne. F.R.S., etc. 8vo, 248 pp., illustrated with 99 photographs and fourteen figures in the text. 2nd Edition. Marcus F. Marks, Government Printer, 1919, Wellington, New Zealand.

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Hardy Cyclamen.—Seedlings that were raised last October and planted in prepared nursery beds during spring may be transferred to permanent quarters. As a colony in shady nooks of the rock garden, or grouped around the base of clean-stemmed trees, they provide a pleasing feature—especially those flowering in mid-winter. Deeply work the selected site and incorporate sand, leaf-mould, peat, and lime rubble with the top soil. Plant the corms 3 inches deep, placing sharp sand around them, and supply a light surface dressing of coco-nut fibre refuse to conserve the soil moisture; additional fibre or leaves may be given in winter to prevent frost from lifting the corms. A little patience must be exercised with hardy Cyclamen, as they generally require one season in which to establish themselves. An annual top-dressing—previously removing the surface soil—should be afforded the plants after the leaves die down. Dried cow-manure passed through a sieve and mixed with loam, grit, bone meal and lime rubble makes an excellent compost for this purpose.

Helichrysum macranthum.—Seeds of this everlasting flower should be sown thinly in boxes at this season; winter the seedlings under glass and plant them out in early April. Spring sowings do not give the plants sufficient time, in average seasons, to produce a good crop of flowers for drying. *H. bracteatum* makes a useful companion to the above. Light soils are the most suitable for these plants.

Aster.—An abnormally wet July, such as experienced this year, brings out the value of perennial Asters in the flower garden. Aster Climax has made vigorous shoots nearly 6 feet high: this is one of the latest varieties to flower. Longer supports are necessary in some instances, and, where practicable, forked and twiggy sticks should be used in preference to stakes and ties. An application of liquid manure will be beneficial to all sections at the present time. Tall Asters are showy subjects for planting in the background of low shrubberies.

Hydrangea hortensis.—August is the best time in which to propagate Hydrangeas. From plants in the open ground make cuttings, three inches long, of firm shoots; insert them singly in small pots and plunge the pots in a cold frame. Afford shade from sunshine and give attention to watering and spraying the foliage as required. When well rooted, the plants should be potted into the pots in which they are intended to flower. Good varieties are Madame Mouilliere, white; La Lorraine, pink; and Bouquet Rose, which is true to its name. Apply liquid manure frequently to plants showing flower. Established plants that have finished flowering should be relieved of all weak shoots and old flower growths without delay. Where chemicals are required to produce blue inflorescences for next season, the colouring matter should be given at the present time, and applications continued at suitable intervals throughout the year. White varieties should not be so treated.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

July Sown Root Crops.—Carrots, Turnips, and Globe Beet, sown in July, must be thinned out early, and at the final thinning the individual plants may be left closer together than would be advisable for summer crops. Dutch-hoeing between the rows facilitates rapid growth and should be regularly practised.

Beet.—It is a mistake to leave Beetroots in the ground until they become large and coarse. As

soon as they reach a suitable size they should be lifted and stored in fine ashes at the foot of a north wall. Beetroot improves in colour after being lifted.

Marrows.—Thin and train the growths so as to prevent overcrowding. If mildew is present dust the foliage with flowers of sulphur. Where ripe Marrows are required for preserving, mark the plants which are to produce them, but cut all other plants cut the fruits as soon as they become large enough. Supply the roots with liquid manure to keep the plants growing freely.

Carrots.—A sowing of early varieties of Carrots made now in frames or pits will give a useful supply of young roots at the end of the year. Six inches of light soil will be sufficient for their requirements, and the seeds should be sown in shallow drills drawn six inches apart.

Mushrooms.—Material for making the beds in a Mushroom house should be collected. Horse-manure, minus the longest of the straw, is the best medium for Mushroom production. This should be placed in an open shed until sufficient to make a bed has been accumulated. Meanwhile, turn the heap frequently, and on each occasion bring the outside material to the centre. When fermentation has reduced the litter to a dark brown colour, and it is sufficiently moist to bind under moderate pressure, it will be fit for use. Place the manure in position and make it firm by beating it with the back of a fork. Spawning should take place when the temperature of the bed is receding below 90 deg.; immediately after spawning the bed cover it with two inches of sifted loam. A light covering of straw should be placed over the bed to retain heat and moisture. Previous to the commencement of this work the Mushroom house should receive a thorough cleansing and the walls be lime-washed.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Chrysanthemum.—The plants have now filled their pots with roots, and require assistance from approved artificial manures, supplied alternately with liquid farmyard manure and soot water. Whatever manure is used, no application should be excessive, or the result will be soft, sappy growth which will produce unsatisfactory flowers. During spells of wet weather the plants should be carefully examined, as the large leaves prevent rain from reaching the roots, although the surface soil may appear to be moist. The pots should be tapped to ascertain whether the contents are really dry or not. Attend to staking and tying, and keep an outlook for aphids, which may be destroyed by dusting with tobacco powder or spraying with some approved insecticide. Earwigs frequently prove troublesome, and may cause enormous damage to the growing points and young buds. They may be trapped in short lengths of hollow cane, or in the hollow, dry stems of Broad Beans. Small pots filled with dry hay are also good traps.

Dipladenia.—Where Dipladenias are still growing freely and producing flowers, they should be assisted by applications of very weak liquid manure or soot water. Such assistance is very necessary when the plants are growing freely, for, as a rule, they are not potted in very rich compost. Stock may be increased now by means of cuttings made from ripened shoots. These root readily in a warm propagating case. Plants propagated now make good specimens for next year, and may generally be depended on to winter well, whereas old plants are uncertain.

Osmanthus Delavayi.—Although this plant is hardy if grown against a wall in the southern counties, it is worth growing as a pot plant for the cool greenhouse. It soon becomes a neat little bush, and in early spring produces its fragrant, white flowers with wonderful freedom. It is easily propagated by means of cuttings, which, inserted now, root readily in a cool propagating case. Plants of this description that will produce their flowers in unheated houses are deserving of more attention.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

The Orchard House.—In a season like the present, when choice Pears and Apples are not plentiful, the value of orchard house trees cannot be over-estimated. When once the fruits begin to swell, they advance rapidly and ripen quickly, but at this stage a fairly high temperature is necessary to produce the finest results, but it has not been obtainable of late without the aid of fireheat. The temperature can be maintained in fine weather by closing the house early in the afternoon and syringing the trees with soft water at the same temperature as the house. When the fruits are nearly ripe syringing should be discontinued and more air admitted; a little fireheat may improve the quality of the fruits. The roots of the trees require rich stimulants and plenty of water; neglect to supply water would prove disastrous. The young shoots should not be stopped after this date, although it is a mistake to allow more young wood to remain than is necessary for furnishing the trees.

Potting Orchard House Trees.—Pot any trees that require it soon after the fruits are gathered, the chief object being to get them well established before the leaves fall. Commence with Peach and Nectarine trees, reducing their roots and repotting them in pots of the same size as those they previously occupied. Trees in pots should have richer soil than those planted out, as the roots are under the complete control of the cultivator. Good fibrous loam with some bone meal and lime rubble added form a suitable rooting medium which should be well rammed about the roots. Syringe the trees frequently on sunny days to keep the shoots from flagging, and to assist new root action. A moist condition of the soil is essential to root growth, and tempting to worms, hence each pot should be stood on two bricks placed a few inches apart. Secure the trees to stakes to prevent damage by strong winds.

Pot Vines.—Pot Vines, treated as advised in a previous calendar and intended for starting in December, should now be nearly ripe and resting. They will not require much water after the foliage falls, but the soil should not be allowed to shrink from the sides of the pots. All the laterals having been shortened back, the important point is to obtain perfect maturity of the wood and buds. Young canes of the current year will now be fit for removal to a light, airy house, or they may be placed against a warm wall. Keep them well supplied with water for some time to come.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Sophranitis.—Plants of scarlet Sophranitis grandiflora will need attention if the compost is in a sour condition or if they have become leafless and bare in the centre, otherwise they should be left alone. They generally thrive in a mixture of Osmunda fibre and Sphagnum-moss, placed in shallow pans over ample drainage material. Suspend the pans about two feet below the roof rafters of the cool or intermediate houses, and afford water sparingly until the roots are re-established.

Calanthe.—Calanthe Veitchii and other kinds belonging to the same section are growing freely and will require plenty of water at the roots. To prevent the appearance of the spot disease a little top ventilation should be given throughout the night, but a certain amount of warmth from the hot water pipes may be needed to keep up the requisite temperature of 60° to 65°. When the new pseudo-bulbs are formed the roots may be fed with weak liquid cow manure.

Miltonia vexillaria.—Plants that flowered early in the year will have advanced sufficiently to permit the annual repotting to be carried out. A suitable rooting medium consists of Osmunda-fibre, Sphagnum-moss, and half-decayed Oak

leaves, in equal parts. Cut the material into moderately small portions, and sift out the finer particles. As *M. vexillaria* and its various forms are more or less shallow rooting subjects, it will be necessary to fill the pots or pans one-third of their depth with drainage material. Hard potting must not be practised, but the soil should be made firm enough to hold the plant in position. Small plants may be placed in larger pots with little or no disturbance of the roots, beyond removing the drainage material and dead *Sphagnum*-moss. Large specimens with several leads should be pulled to pieces and thoroughly overhauled. Dead roots should be cut away, and the back pseudo-bulbs reduced to two behind each lead. These detached growths may be given a separate existence, or several may be placed together to form a large specimen. If the latter method is followed the growing points should be arranged evenly over the surface. Back pseudo-bulbs may be used for propagating purposes; they should be put into small pots, filled with broken crocks and a little chopped *Sphagnum*-moss, and placed in a shady corner of the Cattleya house until new growth is formed. *Miltonias* should be grown near the roof glass of the intermediate house, for some time to come, and if the plant stage is too far from the glass it should be raised to the required level. Apply water in moderation until root action becomes vigorous, when a liberal supply should be afforded. Keep the atmosphere moist, and should the weather prove hot and dry, spray the plants lightly overhead, sufficiently early in the day to permit the foliage to dry before nightfall. It sometimes happens that leaves cling together, and unless they are released they become crippled. This difficulty may be overcome by inserting the handle of a budding knife between leaves affected.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.
The Noddy, Cadicote, Welwyn, Hertfordshire.

Apricots.—These fruits are ripening, and should be protected from birds, wasps, woodlice, and earwigs, all of which are specially fond of them. Perhaps the best way to trap earwigs is to place some dry Bean stalks among the branches, examine them every morning, and blow the insects into a bottle containing a liquid insecticide. Woodlice may be caught by means of a little hay placed in the bottom of small, inverted flower pots placed at the base of the tree. If the fruits are to be used for bottling it is not necessary for them to become quite ripe; in fact, they are best bottled while quite ripe. The ripest and choicest fruits for dessert use should be gathered every day, placed in a box, and stored in a dry, warm room, where they will soon ripen. Apricots form an excellent change among dessert fruits, but they are difficult to ripen thoroughly in a dull, sunless season. Continue to train in the branches, but prevent overcrowding; all laterals not required should be closely pinched back to form fruit spurs. The roots of Apricot trees should not be watered while the fruits are ripening, but should the weather prove dry they may receive a liberal watering afterwards.

Morello Cherries.—These fruits will be ready for bottling; if left to become too ripe they are useless for this purpose. The necessary quantity should be gathered on a dry day, and those that are to be left for other purposes should be protected from birds. The Morello Cherry crop is excellent here, and the fruits exceptionally fine.

Fruit Gathering.—The gathering of various fruits will require careful attention. Early varieties of Apples and Pears will often be lacking in flavour if gathered a few days too early; while, on the contrary, if allowed to remain a few days too long on the trees, they are liable to become mealy. Very early Apples should, if possible, be gathered as required for use; if gathered and stored in the fruit room for any length of time they soon lose their freshness and flavour, and become unfit for dessert purposes. The colour of the pips is a good guide in gathering Apples.

THE ALPINE GARDEN.

ERYSIMUM LINIFOLIUM.

I WAS glad to see the excellent illustration in *The Gardeners' Chronicle* of August 7 (page 69) of *Cheiranthus* (syn. *Erysimum*) *linifolius*, and to read "C.B.'s" notes on the plant, for I take rather a special interest in the species, having been the first, I think, to introduce it to cultivation some eight or ten years ago. The seed was collected by a relative at Vigo, and I was at once struck by its great possibilities as a rock-garden or wall-garden plant. But I soon came to the conclusion that it was not sufficiently long-lived to offer to the public among a general collection of hardy perennials and alpine. It was obviously a seedsman's plant, and it was as such that I later put it on the market. Subsequently, when Messrs. Watkins and Simpson took up its distribution, I felt that the popularity of the species was assured. The National Hardy Plant Society gave it an Award of Merit, but, so far as I know, it has never been put before the Royal Horticultural Society's Floral Committee in good form. I notice that "C.B." favours the name *Erysimum* rather than *Cheiranthus*. I have

looking so exquisite above the small and pretty leaves. Further acquaintance with the plant has not lessened my admiration, especially as *Julia's Primrose* is a most obliging little plant, so far as culture is concerned, and gives its owner little trouble. It loves moisture, and is exceptionally fine by the edge of a stream or pond, but it will thrive in a border, and a plant set in a dry moraine among stones has rewarded me by giving the most charming little flowers which look just like small purple Violets. *P. Juliae* does not seem to resent this impoverishment of the moraine, although it is stunted as compared with a big group by the side of a pond, which gives bigger leaves and numbers of larger flowers of the same vivid purple. It is also easy to increase by division, as, after flowering, it spreads freely. It is thoroughly hardy, so that this little beauty from the Caucasus, which came to us in 1901, is a real gem for British gardens. *S. Arnott.*

CAMPANULA GARGANICA TULLY VARIETY.

THIS *Campanula*, about which a paragraph appeared in your issue of August 7, page 69, should be, I believe, *Campanula garganica* Tully variety.

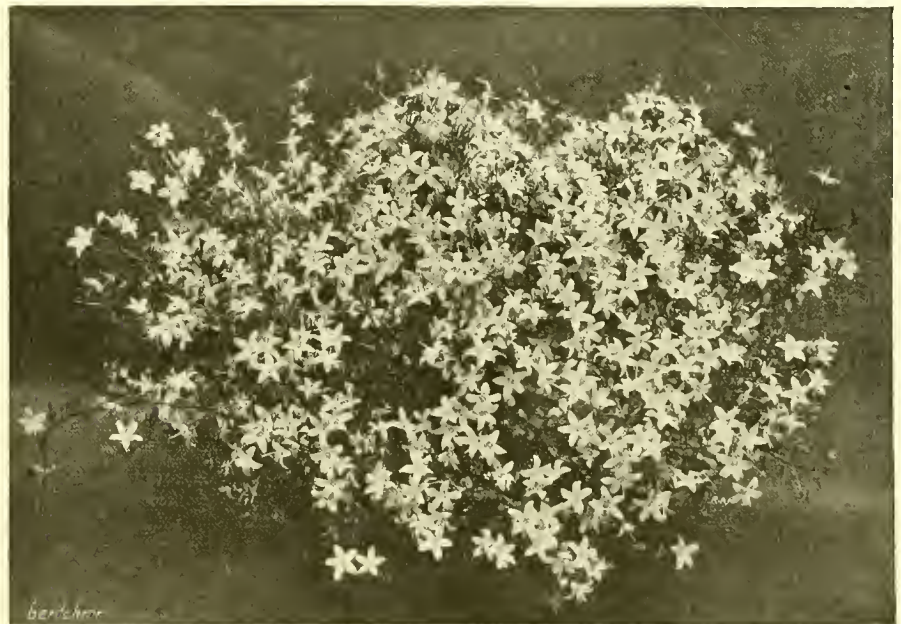


FIG. 42.—*CAMPANULA GARGANICA* W. H. PAINE; AS SHOWN BY MESSRS. WATSON AND SON WHEN THE PLANT RECEIVED THE R.H.S. AWARD OF MERIT.

always used *Cheiranthus* on the authority of either Kew or Edinburgh or both—I forget which. It hybridises with *Cheiranthus*, for I have here a perennial and almost perpetual-flowering hybrid, with fragrant, bronze-purple flowers, which has been a mass of blossom since March last, and now, in August, shows every sign of its intention of continuing to flower more profusely than ever for many weeks to come. This hybrid is sterile, but may be increased by means of cuttings. A very pleasant characteristic of *Cheiranthus linifolius* is its habit of flowering right up to the worst winter weather. I have had it in bloom at Christmas, with its pretty lilac petals thick with hoar frost, and they were quite unharmed. *Clarence Elliott, St. Neage.*

[The *Index Kewensis* gives the name of the above plant as *Erysimum linifolium*, and regards *Cheiranthus linifolius* as a synonym.—Eds.]

PRIMULA JULIAE

MY first acquaintance with *Primula Juliae* was made some years ago when studying the rarities then cultivated so carefully under glass in the Royal Botanic Gardens, Edinburgh, by Professor Bayley Balfour and his staff. I was enchanted with its lovely violet flowers set thickly on the plants growing in small pans, and

not Tully's variety. As your correspondent states he knows nothing of the origin of the plant, I may refer to *C. g. Tully* var., and *C. g. W. H. Paine*. The two plants are, to the best of my belief, identical; they were put into commerce about ten years ago by the Tully Nursery, Kildare, where Mr. W. H. Paine was at that time manager. I well remember the plant being distributed under the varietal name of *W. H. Paine* (I was employed at Tully at the time), and I have on several occasions since seen it under the name of *Tully* variety. The original plant from which the stock was propagated grew in the Japanese Garden (of which there was a fine example at Tully) and had been in existence for some years before the nursery was started. From inquiries I made regarding the original plant, I found it had been supplied as a *C. garganica* seedling years before by Messrs. Backhouse and Co., of York. I agree with your correspondent that *C. garganica* *W. H. Paine* (see Fig. 42) is a delightful plant, and if there is a "Tully's" variety, which is distinct from *Tully* variety or from the var. *W. H. Paine*, and is better than the latter, then it must be a most delightful object when in flower. *W. D. Bosant, Ardornish Gardens, Morvern, Argyllshire.*

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

TEMPERATE RAIN FOREST OF THE BURMESE FRONTIER.

PROBABLY all the mountainous country forming the north-east frontier of Burma was once forest clad. Only on the steepest slopes, where granite crops out in smooth slabs, breaking off into scarps, can trees find no foothold. But down in the hot, moist valleys, between 2,000 and 6,000 feet altitude, the original vegetation has been much interfered with by generations of men felling and burning the jungle to make way for their crops. After one crop has been raised the hill cultivation lies fallow for six or eight years before being burnt a second time.

The first plants to cover it are species of Compositae, *Andrographis* and others, growing 5 feet high. Gradually trees and bushes spring up—*Alnus nepalensis*, species of *Saurauja*, *Rubus*, *Bracken*, and so on; till after a few years it is ripe for a second clearing. Thus, looking down the valley, the slopes are seen to be chequered with patches of cultivation and of secondary growth in all stages, from waifs of the first year to thickets of the sixth; the whole striped with dark lines of jungle marking the trenches down which water rolls from the mountains.

Ignoring these irregularities, however, the forest may be conveniently divided into three well marked belts, as follow:—(1) Jungle between 2,000 and 5,000 feet; (2) Temperate Rain Forest between 5,000 and 9,000 feet; and (3) Conifer Forest up to the tree line, from 9,000 to about 12,000 feet. These belts, of course, grade into one another, but in their typical form are quite unmistakable.

The jungle is typically Indo-Malayan and evergreen. Rain falls at all seasons of the year—there is no regular alternation of wet and dry seasons as in the monsoon region proper. The summer (in the valleys) is hot, the winters are not very cold; so that the climate, except for the lower average temperature and more marked hot and cold seasons, approaches that of the Equatorial belt, especially as regards a regular supply of moisture. There are many lianas, such as *Mussaenda*, *Calycopteris* and *Bauhinia*, and many epiphytes. Several species of Palms, including the *Rattan Cane* (*Calamus*) and the *Sago Palm* (*Caryota*), abound. Of trees, the orders chiefly represented are *Dilleniaceae*, *Polygalaceae*, *Juglandaceae*, *Malvaceae* (*Hibiscus*), *Tiliaceae* (*Elaeocarpus*), *Theaceae*, and so on, besides Bamboos and herbaceous plants belonging to the orders *Araceae*, *Zingiberaceae*, *Gesneraceae* and *Acanthaceae*. It is, however, with the next belt, called Temperate Rain Forest, that I intend particularly to deal.

Temperate Rain Forest is essentially composed of evergreen trees, whether it occupies isolated regions like New Zealand and Southern Japan, or is directly connected with tropical regions, as in Florida and on the North-East Frontier. Tank buttress roots are rare, and feebly developed, though seen in the Htawgaw Hills. Another characteristic tropical feature, cauliflory, though not uncommon in species of *Ficus*, is on the whole rare; there are, too, far fewer woody lianas met with in these forests than in tropical

rain forests. Species of *Aristolochia*, *Clematis*, *Schizandra*, *Vitis*, and *Hydrangea*, are all met with, but they are very much smaller than the giant *Rubiaceae* and *Verbenaceae* of the tropics. On the contrary, epiphytes abound, though the winter cold is hostile to them, as they are then unable to absorb moisture; many are therefore provided with water-storing tissue.

In the Htawgaw Hills Ferns bulk largely amongst the epiphytes, but there are also many Orchids, Aroids, members of *Gesneraceae* and *Zingiberaceae*; also a few of *Ericaceae*, such as *Agapetes*. Finally, as regards undergrowth, it may be said that this forest is fairly open except where, as in gullies, there is a heavy growth of Bamboo. Such undergrowth as exists is mostly herbaceous—*Liliaceae*, *Orchidaceae*, *Strobilanthes*, *Arisaema*, *Urticaceae*, *Impatiens* and many Ferns.

So much for the general characteristics of Temperate Rain Forest. To the traveller who penetrates such forests, especially if he has passed through tropical rain forest, or monsoon forest on his way, they present certain novel features; nevertheless, the passage from Indo-Malayan Forest, on the North-East Frontier, to Temperate Rain Forest, is gradual; the latter appears, at least in the lower belt, as merely impoverished tropical forest. Indo-Malayan forms can be traced as high as 8,000 feet, and it is clear that Temperate Rain Forest, which is directly connected with tropical forests in this way, must bear a certain family resemblance to them.

In the Htawgaw Hills the temperate forest is entered from the last hill clearing, and the traveller finds himself in deep gloom. The trees are of great size, with massive trunks; their branches are draped with moss and a wealth of epiphytes covers them. Amongst the largest trees are several species of Oak, *Bucklandia populnea*, and *Acer*. Others are species of *Magnolia*, *Schima*, *Rhododendron*, and even *Ficus*. Progress is slow, for the path is steep, and in many places a pause must be made to cut a way through the Bamboos. These grow socially, and are about 30 feet high. As for the trees, it is with the greatest difficulty that one can make out what they are, or secure specimens; for flowers and foliage are high above us, and the prospect of telling any of these giants seems hopeless. More indirect devices have to be adopted. On the ground are last year's fruits—the cups of a *Magnolia* or *Mitchellia*, the four-beaked cups of a *Schima*, and many acorns; or there are fallen blossoms—the creamy corollas of *Gordonia*, or the crimson ones of a *Rhododendron*. When an open ridge is reached it is possible to look across the valley over the tops of the trees and recognise others by their foliage, especially the big Palm-like *Araliaceae*—*Brasniopsis*, and others; and *Rhododendron sinogrande* with leaves two feet long.

At about 8,000 feet, on the ridge, red-barked Birch trees appear, besides several species of Maple, and *Rhododendrons* occur in greater variety. Here are found, on the exposed slopes, shrubs rather than trees—*Enkianthus*, *Buddleia*, *Hydrangea*, *Salix*, *Pyrus*, and many more; but in ascending the valleys Conifers increase in numbers. The most striking features of the Rain Forest are the great girth and height of the trees—an Oak I measured was 29 feet in girth at 5 feet from the ground, and its height I estimated at 120 feet—their dense branching, and the openness of the forest.

Leaving the ridge, I plunged down steeply to a gully below, and found the banks covered with two species of *Primula*, often within splash of the torrent. Both were of the obconico-Listeri

type. There was also a *Circaea* in flower, and a *Chirita*, whose large, pouting perianths, pale violet in colour, were very striking. Lower down on the rocks was an *Impatiens* with bright orange flowers. But on the whole there were very few flowers.

There are not many shrubs in the forest. Species of *Euonymus* are seen in places, and patches of an *Oxyspora* with handsome foliage and bright, purple pink flowers, opening rather late in August. Others are *Helwingia*, with flowers apparently springing from the centre of the leaf, owing to "adnation"; *Agapetes*, *Viburnum*, and several species of *Rubus*. Both the *Euonymus*, with its pendent fruits displaying orange seeds; and the *Helwingia*, with a black berry, like a Currant, in the middle of each leaf, are more noticeable in winter.

Of epiphytes, the most conspicuous are the Orchids and *Gesnerads*. Amongst the former I found at 7,000 feet a magnificent white-flowered *Vanda*, high up on a tree, which offered no encouragement to the human climber; so an hour was spent cutting down the tree with soft iron *dah*. I secured specimens of the *Vanda*, but the plants did not survive the journey to England. However, I sent some to the civil officer at Htawgaw—a keen gardener, and hope to hear of their establishment there. Another common Orchid was a *Coelogyne*, white with orange stripes on the labellum; this is found beyond the most sanguine limits of the Temperate Rain Forest, at over 9,000 feet, and should prove hardy in England, if we could supply it with sufficient rain in summer. Nine years out of ten there would be no great difficulty on that score.

But the most curious Orchid of all was a somewhat rare species, always found as a solitary plant; it had a slender spur six inches long, at the bottom of which was a little liquid honey. What insect living in this dripping gloom there could be to pollinate this flower, I did not ascertain; one was instinctively reminded of *Angraecum sesquipedale*, of Madagascar. The epiphytic *Gesnerads* include several species of scarlet-flowered *Aeschynanthus*. They have polished, leathery leaves, and water-storing tissue in the form of tuberous swellings on the stems. Most of them flower rather late, towards the end of July and during August. Also species of *Lysionotus*, with waxy-looking, violet flowers.

In the damper parts of the forest the ground is often covered with *Urticaceae*. Here, too, is found *Arisaema Wallichianum*, whose handsome, chocolate spathe is drawn out at the tip into a flagellum which may reach a length of six feet. Its three-lobed leaves are enormous. From the fermenting mould spring many pileate fungi, and during the summer rains the whole forest seems to be in the evil grip of deadly, fungoid parasites covering the Bamboos, the trees and the ground.

Here and there, in little grassy openings in the forest and in the glades, I found the little Ranunculaceous plant, *Coptis Teeta*, eagerly sought by the natives. It is the "huang lien" of the Chinese, the yellow roots being prized for their medicinal properties; they are gathered in the forests of the North-East Frontier and taken to China, where they realise a fair price. Here, too, are found scentless Violets, and a few ground Orchids, chocolate-flowered or pale green, of the genus *Calanthe*.

Yes, the Temperate Rain Forest of the North-East Frontier, where Indo-Malayan, Himalayan, and Chinese forms meet, is full of interesting things. But the perpetual drip, drip, of the rain, the endless climbing through trackless jungle, and the torment of leeches, make it difficult of exploration. F. Kingdon Ward.

PAEONIA DELAVAYI.

THOUGH there is no lack of garden specimens to which Delavay's name has been attached, his typical *Paenony* is a rare species. The plants usually grown in gardens under this name are seldom more than a foot or two in height: they are leafy, but rarely floriferous, and such few blooms as they put forth are small and of indeterminate colouring, in which yellow and red strive for mastery. The result is either orange-brown or a dingy red petal colour smudged with yellow.

In either case the colouring is unattractive, and is not improved by the poor shape of the flower, which in these nondescript specimens seems imperfectly developed. Altogether, it is not, perhaps, surprising that the reputation of *P. Delavayi* does not stand high.

It is obvious, however, that those who rate *P. Delavayi* lightly base their opinion not on the typical species, which in all probability they have not seen, but on the worthless forms referred to above. The notes on the species Mr. Forrest has been so good as to contribute make it clear that these forms are not *P. Delavayi*, but varieties of *P. lutea* such as he found on the Chung-tien plateau, or, as seems more likely, on the Yung-ling ranges; for, having been discovered as recently as 1917, young plants of the former are only now finding their way into cultivation. Mr. Forrest, who has had unique opportunities of forming an opinion, holds that in their own way and in their natural surroundings, these Yung-ling *Paenonies* have a beauty of their own that is not noticeable in specimens grown in this country.

Although the well-understood difficulties of outdoor plant photography have not been entirely overcome in this instance, the picture of *P. Delavayi* (Fig. 43) is a fair illustration of the capabilities of the species when cultivated, and a comparison of this plant with those in the illustration of the wild species reproduced from a photograph (Fig. 44) taken by Mr. Forrest on the Lichiang Range in 1910 is instructive.

Through the courtesy of the Regius Keeper of the Edinburgh Botanic Garden, the plant illustrated in Fig. 43 reached the writer's hands in 1911 as a tiny seedling. It has progressed steadily year by year till it is now between six and seven feet high. Each season an additional stem or two is thrown up, and in a couple of years adds its complement to the shrubby and floriferous character of the plant.

The individual blooms are from three to four inches across, of a deep, rich red, such as one may see when the sun shines through a glass of Burgundy. They have hardly opened fully enough to expose the yellow heart of the flower before the bees see to it that the petals are delicately powdered with golden pollen. The weighty blooms are slightly pendulous, and in the particular specimen figured the petals are inclined to be involute. In a neighbouring plant the flowers are nearly flat, as in some forms of *P. lutea*, and their starry shape is well shown in Fig. 41.

After the foliage has died away in late autumn it clings to the woody stems, rustling to the winter gales in ghostly fashion, and is so tenacious as to need removal when the new growth appears in April. The plant seems proof against anything our climate can produce; it passed through the wintry spring of 1917 unharmed, and the writer has more than once seen the stork-like stem and dead leaves glazed with ice.

As a rule, *P. Delavayi* is out of flower from two to three weeks before *P. lutea* opens its first bloom, and the writer has never known them in bloom simultaneously. The particular specimen referred to fruits regularly, the seed being about the size of a hedge-sparrow's egg. The majority of the seeds are hollow, but there are always some that are fertile, and they germinate in due season.

In the typical *P. Delavayi*, the new growth comes up close to the old stems and there is little sign of the wandering habit so characteristic of the new growth of *P. lutea*. A new

shoot of the latter may often be found pushing up 18 inches away from the main stems. If these side shoots are removed and the plant well fed, the main stems push up till the *Paenony* no longer merits the reproach that one must go down on one's hands and knees to see the flower.

The late Mr. Gumbleton held the view that *P. lutea* and *P. Delavayi* are geographical forms of one species, and to the amateur they certainly seem to have much in common. Mr. E. H. Wilson discovered a distinct form of *P. Delavayi* at Tachien-lu in 1904 and named it var. *angustiloba*. A. Grove.

THOUGH many fine forms of *Paenonia Montana* are cultivated by the Chinese in Yunnan, the only two species really indigenous in the province are *P. Delavayi* and *P. lutea*. Both were discovered by that famous collector, the Abbé

P. lutea is about four feet high. The stems are generally bare for two-thirds of the actual height, and crowned by a mass of finely cut, light green leaves, very graceful in appearance, with the blooms most often at, or near, the base of the foliage.

Under the most favourable conditions these *Paenonies* are equally floriferous, though the chief honour must be given to *P. lutea* in that respect. They are plants of the open Alps, but at their best where a certain amount of shelter from wind is afforded by scattered scrub and bracken. Most often they are found on a southern or eastern exposure in light, rubbly, well-drained loam.

The flowers of *P. Delavayi* range from 2½ inches to 4 inches in diameter and are semi-pendulous; the petals are more or less involute, very fleshy, shining, of a deep, almost blood, crimson, with golden or greenish-yellow anthers. With the

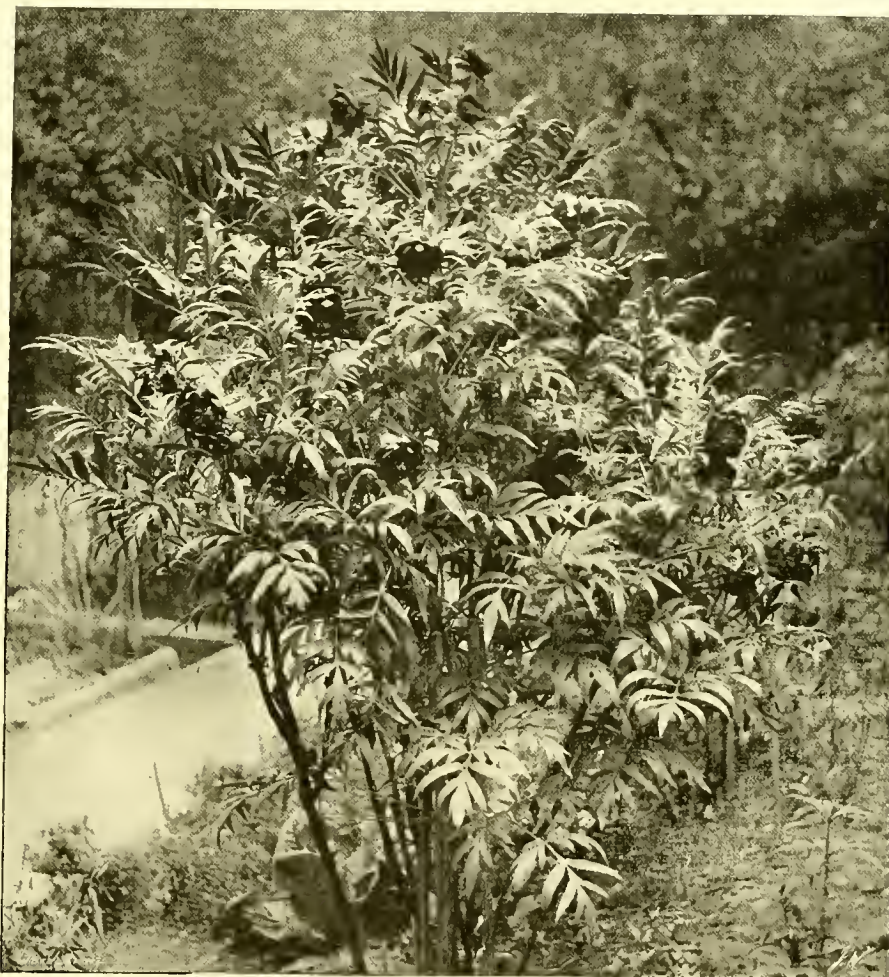


FIG. 43.—*PAEONIA DELAVAYI*: A CULTIVATED SPECIMEN IN AN ENGLISH GARDEN.

Delavay, to whom we are indebted for many of the finer Yunnan plants.

P. lutea was the first discovered, in 1883, on the limestone mountains east of the great Tali lake; and a year later the species which bears his name, on the snow-clad Lichiang Range, also a lime formation. Both were found at much the same altitude—from 10-12,000 feet. Père Delavay had also the honour of introducing them to cultivation.

At the time of their discovery, both species were considered to be extremely local plants, but recent exploration has shown them to be fairly abundant in most Alpine regions from latitude 25° northwards into Tsarang, the easternmost province of Tibet. Both are semi-shrubby, varying much in height according to situation. *P. Delavayi*, the taller of the two, sometimes attains a height of fully six feet;

exception of occasionally a slight greenish or yellowish base to the petals there is no variation in colouring.

P. lutea bears yellow flowers, as the name denotes, but the shade is not always the same, and varies in different plants and localities from a very light, almost sulphur, to a deep canary-yellow. Nor are the petals so incurved as in the other species. And, unlike *P. Delavayi*, it does not even retain the self-colour, and the fact has given rise to doubts as to whether it is not possibly only a form of that species.

In 1917, whilst travelling on the Chung-tien plateau at an altitude of from 11-13,000 ft., I rode for days through scattered breadths of *P. lutea*, and though many had flowers of the most lovely shade of yellow, and all were magnificent plants, yet 50 per cent. or more bore blooms either blotched with deep crimson at

the base or flushed throughout with a most unsightly shade of dull, brownish-orange. The sight gave me the impression that here was a natural hybrid of the two species, though I know of no locality for *P. Delavayi* nearer than the Lichiang Range, nearly seven days' journey south of where I was. In opposition to this fact, I knew the two species grew only a few miles apart on the Tali Range, and at much the same altitude, yet with *P. lutea* of a pure self shade.

Again, in 1913, in S.W. Szechuan, N.E. of the great Yangtse bend, on the ranges surrounding Yung-ling, in latitude 27° 50' north, I found a dwarf shrubby form (or species?) resembling *P. lutea* in foliage, but with a maximum height of only two feet, and very much smaller flowers—less than two inches in diameter—incurved as much as those of a *Trollius*, and of the same orange-brown tint seen in so many of the Chung-tien plants. Can that also be a hybrid? Or have we a number of distinct species, similar in foliage but differing in flower? Or may they not be merely geographical forms of one or the other species, as is seen so often in many species of the Yunnan flora? *G. Forrest*.



(Photo by G. Forrest)

FIG. 44.—*PAEONIA DELAVAYI* AS FOUND ON THE LICHANG RANGE IN 1910.

TREES AND SHRUBS.

VERONICA BARKERI.

For the past two years I have been observing a very handsome, shrubby *Veronica* of neat habit in the grounds of the John Innes Horticultural Institution, Merton, Surrey. The plant has attained a height of 18 inches, and has been flowering abundantly since the latter part of June, the numerous racemes slightly exceeding the leaves. The upper half of the corolla is deep lilac-purple, the rest being white, and the two colours give the bushes quite a different effect from any other species which I have seen. This I have identified as *V. Barkeri*. It was collected by Barker and Cockayne in the Chatham Islands. Mr. T. F. Cheeseman includes it in his *Manual of the New Zealand Flora*, with a doubt as to its distinctness from *V. Dieffenbachii*, but it seems to possess all the characters which Cockayne claims for it, namely, that it differs from the last named "in its erect, not spreading, habit, smaller leaves, shorter racemes, in its extremely pubescent style, and in the midrib not conspicuously raised." The lanceolate leaves are described as attaining a length of two inches, but at present they are shorter, whereas those of *V. Dieffenbachii* vary from 2 in. to 4 in. long. The latter was figured in *Gard. Chron.* II, (1898), p. 154, Fig. 41. *J. F.*

AUTUMN SOWN ONIONS.

AMONG the crops cultivated in the kitchen garden few, if any, give the grower more anxiety than do autumn-sown Onions. But while failures are not altogether unknown in gardens managed by professional gardeners, they occur mostly among amateur and other growers.

The tendency of autumn-sown Onions to bolt is, no doubt, largely due to climatic conditions, but it is chiefly governed by the time of sowing, and the choice of varieties. If good strains are obtained of those varieties recommended for autumn sowing, and seeds are sown as late as possible, according to the locality, losses will be reduced to a minimum.

Locality should determine the date of sowing, but I have found the period from the middle of August to the beginning of September quite early enough to ensure strong plants to withstand the winter. The finest of autumn-sown Onions I ever had were from a sowing made as late as September 12, but I attributed the success to a fine late autumn.

I usually sow seeds in ground previously

ORMSKIRK POTATO TRIALS.

FOLLOWING the precedent happily set a few years ago, the Ministry of Agriculture invited a large number of persons interested in Potatoes to inspect the trials at Ormskirk during the week, which ended on August 14. The main purpose of these trials—the testing of resistance to Wart Disease—has been alluded to many times in these columns and need not be enlarged upon now. That the interest in them is increasing rather than diminishing is shown by the increased number of visitors to the trials this year, and, fortunately, the weather was fine. The trials were demonstrated by Mr. Bryan, who is now in charge of the tests of immunity, and by Mr. A. Birch, the Hon. Director, who is in charge of the cultivation for the National Institute of Botany, under whose aegis much of the work being done upon the farm is now carried out.

The site of the trials has been transferred to the new farm recently acquired by the Institute at Lathom, near Ormskirk. This change of venue will enable the tests to be made upon a different site each year, instead of upon the same ground year after year as was necessary when they were grown in the Workhouse garden in Ormskirk. The main source of error, so far as the work done at Ormskirk is concerned, is removed, for "self-seeds" will be reduced to a minimum, or altogether eliminated.

The trials are mainly in three parts with some subsidiary ones. The first are the plots of varieties which have proved to be immune from attack by Wart Disease. These serve two purposes; they test the continuance of immunity and they test also the truthness of stocks on the market. They show conclusively that the immunity which these varieties were suspected to possess in 1907 has been maintained, and that many stocks have now been purified from rogues to such an extent that they are practically true. The second is the trial of various stocks which, as grown in previous years, have given rise to the supposition that they are immune. It is too early in the season to speak positively with regard to those varieties which show no Wart Disease yet, for some, like *British Queen*, are not attacked until late in the season. One or two varieties which were doubtfully immune have now proved susceptible; others, like *U 15* and *Katie Glover*, will be watched with great interest on account of their promising cropping qualities and habit of growth. *U 15* is apparently a main crop and *Katie Glover* a second early variety.

The third section, including some 750 plots, is to test seedling and supposed new varieties, or old ones that have not appeared in the trials hitherto. All precautions have been taken to ensure that the soil is infected with the Wart Disease organism so that every stock has every chance of contracting the disease, and many, in fact the majority, have already succumbed, and it is expected that numbers of those which do not yet show it will do so before the end of the season.

Two or three features of these trial plots are particularly noticeable. First, the number of plots containing plants identical in every respect with *Up-to-Date*, and, like that variety, succumbing to Wart Disease. Almost equal numbers prove to be identical with *British Queen* and others, again, with *Abundance*; while there are many who have apparently selected the well-known red form of *King Edward* and sent it in for trial under various names. Apart from these, the large number of coloured varieties in the trials is very noticeable. Few are likely to be useful commercially, and it is to be hoped that those amateurs who are interested in the raising of new varieties will aim at raising forms with little or no colour in the skins. Forms like *Kerr's Pink*, with little colour, are useful, but the time is likely soon to be past when varieties to be grown only for the exhibition table are in demand. Good quality, high yield, form and colour that appeal to the general public, as well as resistance to disease, are all required in any new variety bidding for public favour.

The trials are scrutinised by competent persons, not only to see that Wart Disease is

occupied by Potatoes. After having made the soil firm and level, and dressed it with lime and wood ash, I sow the seeds moderately thickly in shallow drills, bearing in mind that where the crop is sown there it will mature. Every season for many years I have transplanted a few seedlings in spring, but as I have found no advantage therefrom as regards the size of the bulb or earliness, I prepare the bed for an autumn sowing in the same way as for a spring sowing.

Last year, owing to the great scarcity of Onions, the autumn-sown crop was a most remunerative one, but this year, owing to the heavy importations of Egyptian Onions, there was less demand for the home crop. In 1918, I sowed seeds of *Ailsa Craig*, *Brown Globe*, and *Up-to-Date*, in addition to *Giant Rocca*, the variety usually relied upon. As an experiment I transplanted a few of each, and practically every one of these plants ran to seed, whilst only a very small percentage of the *Rocca* type did so. I also adopted the method practised by market growers, i.e., that of cutting off the longest of the roots and tops, similarly to *Leeks*, and excepting that I found greater ease in planting, I saw no material difference either way. Many growers select the largest and earliest sown plants; but for maturing a crop the smaller plants are the best if they are kept free from weeds, and receive a little encouragement when growth is active. *E. Beckett, Fota Gardens, Co. Cork.*

not developed, but to see also whether the form under judgment is actually distinct from others already well known, and these facts will, we understand, be published in due course.

The third feature to which attention is particularly drawn is the large number of stocks, some of them sent in as new seedlings, which contain two or more varieties. This is disquieting, for it is plain that too little care is being exercised in keeping stocks clean and free from contamination by other stocks. No true judgment can be based upon such stocks, and in some cases it is impossible by inspection of the plot to say what variety it was intended to contain, so mixed are the plants upon it.

We may congratulate those under whose care the trials are being carried out upon the skill, pains and energy they have so effectively expended upon them. They had the benefit of Mr. John Snell's planning, for he lived long enough to lay down the lines for this year's work, and so far as one may judge the trials are likely to be carried out in the future in a way worthy of the sound foundation he laid.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 83.)

FIFESHIRE.—Fruit trees were never more promising in spring, for they were covered with blossom, but cold, frosty nights caused great damage to all large fruits. Strange to say, Gooseberries, Black and Red Currants, and Raspberries gave abundant crops. *William Henderson, Balbirnie Gardens, Markinch.*

FORFARSHIRE.—All fruit trees and bushes developed an abundance of blossom during the spring, but late frosts in May wrought a great deal of damage, and consequently the crops are, on the whole, poor. Otherwise the season has been very good for growing crops, with practically no gales and no drought. Pests have been on the decline, there being very few caterpillars on fruit trees. The Cabbage Butterfly is also little in evidence. Probably the early, severe frosts of last autumn are responsible for so few insects. Gooseberry mildew has been very slight this year. *J. B. Peppers, The Gardens, Panmure House, Carnoustie.*

KINCARDINESHIRE.—Apple, Pear and Plum trees had a remarkable show of blossom, which set well, but heavy rains spoiled many Strawberries, which decayed on their under sides before they were coloured. *William Thomson, Urie House Gardens.*

MIDLOTHIAN.—All outdoor fruit trees showed a more than usual quantity of blossom, but a continuation of cold wet weather during the flowering period resulted in an almost complete failure of the fruit crops. Our soil is rather light, on a gravel subsoil. *James Whyte, Dalkeith Gardens, Dalkeith.*

PERKSHIRE.—Apple blossom was very plentiful, but cold, sunless weather ruined the prospects for a good fruit year. Strawberries were very good, but many were spoiled by two weeks' rains. Raspberries were plentiful, but did not ripen very fast owing to lack of sunshine. *Alexander Black, Glen Gardens, Innerleithen.*

6. SCOTLAND, W.

ARGYLLSHIRE.—Apples and Pears are poor crops. I have not seen worse for many years, and the fruits are miserably small. There was an abundance of blossom, but at the critical time the weather was cold, wet, and sunless, and often frosty in the mornings. This, I think, accounts for the meagre and poor crops. Strawberries were plentiful, but rain rotted many berries, besides spoiling the flavour. Red and White Currants were abundant, but we had fewer Black Currants owing to the big hail. Cherries, both sweet and Morello, were scarce—the latter very scarce, and this after a great profusion of blossom. On the whole, the fruit crops are most disappointing. *D. S. McIlvrie, Polhallow Gardens, Kilmartin.*

AYRSHIRE.—Owing to prolonged cold, wet weather during the latter part of April and the

greater part of May, with occasional sharp frosts between the 20th and the 30th of the latter month, the fruit crops are the poorest I have had to record since coming here thirty years ago. Caterpillars have been extremely troublesome. *D. Buchanan, Bargany Gardens, Bailly, Ayrshire.*

BUTESHIRE.—Owing chiefly to very cold weather and excessive rains during the time the trees were in flower fruits in this district are all, with the exception of Gooseberries and Currants, very scarce indeed. To make matters worse, just after flowering the trees were subject to a spell of very cold N.E. winds, often bordering on gale force, with the result that the few fruits which set were shrivelled up, and some of the trees damaged to such a degree that it will take them some time to recover. In a long experience the year, up to the present, is one of the worst I ever remember for the garden. *John J. Davidson, Ardencraig Gardens, Rothesay.*

DUMFRIESHIRE.—The fruit crops are more or less failures. Apples are very scarce, and Pears are not much better. Gooseberries were an average crop. Raspberries were good, and Strawberries an average crop, but many of the latter were spoiled by continued rains. There was a good show of blossom on the fruit trees, but the early leaves of Apple trees were riddled with holes, the flowers withered away and did not set. *John Brown, Cairndhu Gardens, Helensburgh.*

(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

A Good Strawberry for a Wet Season.—I was interested in Mr. Wheeler's note on page 77, regarding Givon's Late Prolific Strawberry. My experience coincides with his. With me, this variety withstood the very wet conditions that prevailed during the ripening period much better than the earlier varieties did, and produced a good, average crop. My experience with this variety is that it is unprofitable after the second year, therefore new plantations should be made annually to take the place of those that are to be destroyed. Givon's Late Prolific Strawberry is a robust grower, and I have had excellent results from it by rooting early runners and planting them in rows 15 in. apart and 12 in. apart in the rows, and only allowing them to remain for one season. Excellent fruits for dessert may be obtained by this method. Laxton's International is another good variety for a wet season. This is a mid-season Strawberry and is a good forerunner to Givon's Late Prolific. It is a strong grower and most prolific bearer. The flavour is good, and the berries travel well when packed for transit. *T. P.*

—As your correspondent, Mr. H. Wheeler (see p. 77) invites experience under the above heading, I write to state that the old variety, Keen's Seedling, produced a crop above the average this very wet season, hardly a berry rotting on the plants. *J. P., Carlisle.*

Grapes Cracking.—I have a vine in these gardens which has a peculiar habit of growth. The bunches appear on shoots from the second eye in nearly every instance, and the growth is upright towards the glass. The berries are much subject to cracking. The variety is labelled Black Hamburg, which I think is a mistake, as the berries are round and firm, after the style of Lady Downe's, but larger. The growths are very brittle, and some difficulty is experienced in tying them down. My opinion with regard to the cracking of the berries is that the bunches are too close to the stem, and so make the first demand on the sap. Next season I shall cut out the first bunch and allow the second to grow. The vine is in a mixed house, where all the specimens are nine years old, and planted outside in a confined border. The vine referred to is quite healthy in every way. I shall be interested to know if other growers have had a similar experience to mine. *Wm. McCombie, Mount Pleasant Gardens, Northallerton.*

SOCIETIES.

ROYAL HORTICULTURAL AND ARBORICULTURAL OF IRELAND.

AUGUST 10, 11 and 12.—The exhibition of the Royal Horticultural and Arboricultural Society of Ireland, held in conjunction with the Royal Dublin Society's Horse Show, Ballsbridge, Dublin, on the above dates, was generally conceded to have been an unqualified success. The displays of hardy flowers generally, and Roses and Sweet Peas in particular, were better than even the most sanguine could have anticipated after the long spell of sunless, wet weather. Fortunately there were finer conditions during the show.

In the class for a group of foliage, flowering and decorative plants, and cut flowers, shown on a space of 200 sq. ft., the 1st prize, £10, was won by the Hon. A. E. GUINNESS, Glenmaroon, Co. Dublin (gr., Mr. W. Stevens), with a fine group in which some highly-coloured Codiaeums were conspicuous; Sir STANLEY H. COCHRANE, Bt., Woodbrook, Bray (gr., Mr. G. Bower), 2nd. In the class for a group of hardy flowering and ornamental shrubs, trees and plants, shown as plants or cut sprays, on an area of 200 ft., the 1st prize, with a silver cup presented by the President, the Marquis of Headfort, was won by the DONARD NURSERY COMPANY, Newcastle, Co. Down, for a collection in which Sparaxis and Roses produced a fine effect, most noticeable in the latter being a stand of Queen Alexandra, the superb colouring of old gold and scarlet making it the cynosure of all eyes; Major KELLY, Montrose, Donnybrook (gr., Mr. J. McDermott), 2nd.

Smaller groups call for no comment, but the displays of cut hardy flowers shown on a table-space of 24 ft. by 6 ft. were remarkably fine. Here the 1st prize was won by Mrs. GEO. MITCHELL, Ardun, Blackrock (gr., W. Baker), with a brilliant display; Capt. RIAL's exhibit from Old Conna, Bray (gr., Mr. T. Webster), being 2nd, and including some rarities for which this Wicklow garden is famous. In similar, but smaller, classes excellent exhibits were shown by Capt. DALY, Templeogue House, Co. Dublin (gr., Mr. Murtagh); and Mrs. H. GUINNESS, Chesterfield, Blackrock (gr., Mr. R. Morgan), who were prize-winners in the order named.

In the competitive Rose classes, restricted to the trade, Messrs. HUGH DICKSON, LTD., Belfast, were the only entrants, but had exquisite blooms beautifully staged; they won 1st prizes, and also a further Gold Medal for the new variety, Mr. J. G. Glassford, a grand acquisition, the reputed progeny of the fine dark variety, George Dickson, and somewhat resembling the parent, but with more brilliancy in its colour.

Dahlias were poor. Tuberous Begonias were grand. Mrs. FONEY, Stanley Terrace, Monaghan, excelled, and Major HAMILTON STUBBER had a good set. Gladioli were few in number owing to the season and date. Carnations and other florists' flowers were good, the chief prize-winners in these sections being Mr. G. C. STAPLETON, Wyvern, Killiney (gr., Mr. P. J. Clinch); R. T. HARRIS, Saintbury, Killiney; and Mr. EN. KELLY, Rosebank, Kingstown. Sweet Peas made a very creditable display, the championship for 18 bunches—including the silver cup presented by Mrs. Moloney, Brayfort, Bray—being won for the second time by Viscount POWERSCOURT, K.P. (gr., Mr. W. H. Leel); with Mr. ED. COWDY 2nd, and Mr. G. JOYCE 3rd. The best 12 bunches were shown by Viscount POWERSCOURT; MISS DARLEY, The Orchard, Bray; and Capt. G. H. FOWLER, Rahinstown, Co. Meath, being 2nd and 3rd respectively. Prizes in smaller classes were won by Mr. J. L. MCGEE, Mr. F. V. Westby, and Sir H. McLOUGHLIN.

Fruit was fairly well shown, and Melons were an outstanding feature. In the class for a decorated fruit table there was but one exhibitor, Sir STANLEY H. COCHRANE, who had a tasteful arrangement. For white Grapes Sir STANLEY COCHRANE was 1st, Hon. Mr. JUSTICE WYLLIE (gr., Mr. W. Taylor), 2nd; for black Grapes Mr. JUSTICE WYLLIE and Major KELLY

won 1st and 2nd prizes respectively. Peaches and Nectarines were well shown by the EARL OF MEATH (gr., Mr. L. Childs), Major KELLY, and Col. CLAUDE CANE, St. Wolstans, Celbridge (gr., Mr. A. Horton). In two classes for Melons 1st prizes were won by Mr. C. WISDOM HELY, Oakland, Rathgar (gr., Mr. J. H. Orr), other prize-winners being LORD CLONCURRY, Lyons, Co. Kildare (gr., Mr. W. Hall); and H. J. C. TOLER-AYLWARD, Esq., Kilkenny (gr., Mr. Hy. Hall).

Vegetables proved an attractive feature of the show, the principal class being for a collection shown on a space of 12 ft. by 4 ft., open to all. The prize-winners were Viscount POWERSCOURT and Mrs. HOWARD GUINNESS; the best collections of 12 kinds came from Lord CLONCURRY, Viscount POWERSCOURT, and the LORETO CONVENT, Rathfarnham; smaller collections were best shown by Mr. JUSTICE WYLIE, Mr. W. ROBERTSON, Mr. J. JOLLY, Miss K. DARLEY, and Miss DAVY. Single dishes were generally good.

Non-competitive exhibits were, as usual, the great feature of the show. Messrs. ALEX DICKSON AND SONS were awarded a Gold Medal for a fine exhibit, chiefly of Roses. Silver medals were awarded to Mr. S. A. JONES, Kilkenny for a tastefully arranged group; to Messrs. CHAS. RAMSEY AND SON, The Royal Nurseries, Ballsbridge, Dublin, the chief feature of whose fine stand was Perpetua Carnations; to Messrs. BRADSHAW, Artane Nurseries, Co. Dublin, for varieties of *Violas* and hardy flowers; and to Messrs. WM. WATSON AND SONS, LTD., Killiney Nurseries, Co. Dublin, whose principal subjects were decorative Roses and grandly grown dwarf Apple trees in fruit. Messrs. THOS. MCKENZIE, LTD., Dublin, had a varied collection of garden appliances.

SCOTTISH HORTICULTURAL

AUGUST 3.—The August meeting of this Association was held at 5, St. Andrew Square, Edinburgh, Miss Burton, president, in the chair.

Dr. W. G. SMITH, Edinburgh and East of Scotland College of Agriculture, showed a collection of models of the Potatoes which were exhibited by Messrs. PETER LAWSON AND SONS, Nurserymen, Edinburgh, at the great exhibition in London in 1851. The models, which Dr. SMITH described, are all carefully numbered, the numbers corresponding to those of their descriptions in Messrs. Lawson and Sons' *Vegetable Products of Scotland*. They are in an excellent state of preservation, and, judging from the appearance of varieties well known to some of those present, they seemed to have been very perfectly modelled.

A Certificate of Merit was awarded to a New Ox-Eve Daisy, "Come to Stay," exhibited by Mr. F. BAILLIE, Liberton. The other exhibits were *Pelargoniums*, from Messrs. DOBBIE AND CO.; Sweet Peas and Potatoes from the President and Seedling *Delphiniums*, etc., from Mr. J. COVENTRY, Colinton.

FRENCH CHRYSANTHEMUM.

AFTER a lengthy interval due to the war, the above Society recently held an election appointing officers and committees. The following results are interesting chiefly to the English friends of the society:—M. Viger was re-elected Honorary President; M. René Momméja, President, in place of M. Maxime de la Rocheterie, deceased; M. Ph. Rivoire, Secretary; M. Toscanelli, Assistant Secretary; and M. Gaspard Rozani-Bouchardat, Treasurer, *vice* M. Dubreuil deceased.

The Paris horticultural press is well represented on the General Committee, considering the Society's Headquarters are at Lyons, for we find M. D. Bois, of the *Revue Horticole*, M. Chauré, of the *Moniteur de l'Horticulture*, M. Martinet, of *Le Jardin*, and M. Manméné, of *La Vie à la Campagne*, members of it. The Floral Committee consists of fifteen members and is quite representative of the whole of France. We notice old acquaintances like MM. Blot and Clement, of Paris, Charvet, of Angers, Choulet, of Lyons, Rosette of Caen, and others again taking part in the work of that Committee.

SHROPSHIRE HORTICULTURAL.

AUGUST 18 and 19.—No horticultural event of 1920 has been looked forward to with such keen interest as the revival of the Shropshire Horticultural Society's exhibition, popularly known as Shrewsbury Floral Fete. The gardening public in general, and the committee and officers of the society in particular, wondered whether, after a lapse from 1913 to 1920, the success which attended former shows would be repeated. August 18 opened dull and grey, and while the twenty-seven judges were appraising the merits of the exhibits rain fell. But when the exhibition was opened the tents were soon filled with visitors: by 1.30 p.m. the five big tents were so crowded that note-taking became an almost impossible task; and at 2.30 great queues of people were waiting their turn at the entrance to the tents, while many thousands of people, packed in an apparently solid mass, surrounded the horse-leaping enclosure, and the big stage whereon a continuous variety entertainment was provided. At the moment of writing it is not possible to state what the financial result of the fete will be, but there is no doubt as to its popularity. In passing, we may observe that the charges for admission on the opening day were:—7s. 6d. by special ticket, admitting at 11.30 a.m.; 5s. from 1 to 5 p.m.; and 2s. 6d. from 5 p.m. to close; on Thursday, 5s. from 9.30 a.m. to 11 a.m.; 2s. 6d. from 11 a.m. to 6 p.m.; and 1s. from 6 p.m. to the close.

From a horticultural viewpoint the show was a success. No one expected to see the glorious exhibitions of pre-war years revived at the first attempt, but everyone was surprised at the number and good quality of the exhibits.

A schedule of 171 classes was provided, and in the principal competitions handsome prizes were offered. In the plant classes competition was poor, and it was only fair in many of the fruit and vegetable sections. In the cut flower classes and in the section devoted to floral designs competitors were more numerous. With some few exceptions the exhibits were of good quality. There was only one outdoor exhibit, but the bright floral display in The Dell, the fine avenues of trees, the beautiful green of the grass and the rippling waters of the Severn, were attractions of no mean order.

GROUPS OF PLANTS.

It was quite like old times to find a number of large groups of plants exhibited in a tent that was wont to be filled with some of the finest examples of plant culture to be found in the United Kingdom.

In the principal group class competitors were required to display flowering and foliage plants as artistically as possible on an area of 250 sq. ft. There were three competitors, and the chief award of £35 was won by Messrs. JAS. CYPHER AND SONS, Cheltenham, with one of the daintiest and brightest displays we have ever seen them make. The association of colours was exceptionally good, and the group was a work of art. *Cattleyas*, *Cypripediums*, *Oncidium flexuosum*, *Miltonias*, *Francia ramosa*, *Nerines*, *Lilium auratum*, *L. speciosum album*, and *Ixoras* were the chief flowering subjects, while *Codiaeums*, *Palms*, *Asparagus Sprengeri*, *Rex Begonias*, *Azaleas* and *Humea elegans* added grace of form as well as colour. Sir G. H. KENDRICK won 2nd prize with a fine effort, wherein *Ixoras*, various *Orchids*, and *Fuchsias* were used advantageously. Mr. W. R. MANNING, Dudley, 3rd.

In the class for a group of ornamental foliage plants, including *Palms* and *Ferns*, arranged on a space of 250 sq. feet, there were three competitors. The premier award was won by Messrs. JAMES CYPHER AND SONS, Cheltenham, with an exhibit which was first-rate in so far as colour and general effect were concerned, but which, in our opinion, was hardly so light and elegant as some groups we remember this firm to have staged. *Codiaeums*, *Alocasias*, *Rex Begonias*, *Nandina domestica*, *Dracaenas*, and *Caladiums* provided colour, while *Palms*, *Ferns*, *Selaginellas* and Moss provided the green setting. Mr. W. R. MANNING, Dudley, won 2nd prize with a very handsome exhibit in which *Codiaeums* and *Acerolaphas* were particularly good; Sir G. H.

KENDRICK, Whetstone, Edgbaston, Birmingham (gr., Mr. J. V. Macdonald), 3rd.

Mr. W. R. MANNING was awarded 1st prize for thirty stove and greenhouse plants, in or out of flower, but the exhibit was a poor one, and some of the specimens would have done no credit to a cottagers' show. In our opinion, and making every allowance for the difficulties of the times, the exhibit was not worthy of the £25 offered as premier award. Mr. H. HOWELLS, Belle Vue Gardens, Shrewsbury, showed the best four *Fuchsias*; the plants were good, but would have been better a week or two later. Mr. HERBERT JONES, Bath, won the Challenge Cup offered for a formal garden arranged in the open.

GROUPS OF FLOWERS.

Mr. CHAS. WALL, Bath, won first prize for a collection of perpetual-flowering *Carnations*. His exhibit was a large one and the flowers of excellent quality, but the sharply sloping arrangement was too formal for the proper disposition of such capital material.

Messrs. GUNN AND SONS, Olton, Birmingham, won first prize for a collection of cut *Roses* artistically displayed on a space 20 ft. by 4 ft. The exhibit was a grand one and somewhat like this firm's splendid effort at the Birmingham Show. Outstanding features were the pillars of *Dorothy*, *Dennison* and *Maman Cochet*, the stands of *Golden Emblem*, *Ophelia*, *Coronation* and *Mdme. E. Herriot*; and the bowls of *Mrs. Wemy's* *Quin*, *George Dickson*, *Lyon Rose* and *Lady Hillingdon*. The Silver Challenge Cup was won by Messrs. GUNN AND SONS.

Mr. H. WOOLMAN, Shirley, Birmingham, won the first prize for a collection of *Dahlias* with a handsome exhibit of handsome blooms of leading *Cactus* varieties; Mr. H. CLARKE, Taunton, second, with *Cactus*, *Pompon*, *Collarette*, and *Paeony-flowered* varieties arranged with *Gypsophila paniculata*.

CUT FLOWERS.

Sweet Peas were shown well but not extensively. Mr. W. H. HOLLOWAY, Port Hill, Shrewsbury, had the best eighteen bunches, distinct varieties, and thoroughly upheld his reputation as a first-rate grower; *Barbara*, *Alex. Malcolm*, *Elegance* and *Hawmark Pink* were grandly shown; Mr. J. HAYCOCKS, Gylfelia, Wrexham, second.

Mr. J. RANDALL, Leamington, led for six bunches of Sweet Peas, with finely grown flowers, a trifle weather marked; *Mrs. A. J. Blair*, Congleton, second. For a dozen bunches Mr. T. R. MINSHALL, Longston, Market Drayton, was the most successful competitor and he showed very fine flowers, though some of them were weather stained; his *Constance Hinton* and *Hawmark Pink* were especially good; S. ROBINSON, Esq., Kingston (gr. Mr. G. Frewin), second. Mr. TOM JONES, Ruabon, who was judging Sweet Peas, instead of exhibiting them, won first prize for a dozen bunches of *Asters*, and was also successful in the class for eighteen *Roses*.

E. H. SHORTING, Esq., The Lawns, Broseley, won the chief award for a dozen bunches of hardy flowers, with a fine exhibit, which lacked educational value because none of the subjects were labelled.

Mr. MAURICE PRICHARD, Christchurch, was awarded first prize for two dozen bunches of hardy flowers, for a fine exhibit, in which *Crinum Powelii*, *Montbretia Carminca*, *Lilium tigrinum*, *Galtonia candicans*, and *Gladiolus primulinus* hybrids were outstanding features; Messrs. T. B. GROVE AND SONS, Sutton Coldfield, second; Messrs. HARKNESS AND SONS, Bedale, third.

FLORAL ARRANGEMENTS.

Competition was excellent in the classes for floral arrangements. Messrs. JONES AND SON, Shrewsbury, had the best hand bouquet, a charming arrangement of *Odontodas* and *Odontoglossums*; Mr. M. STATHER, Cottingham, and KING'S ACRE NURSERY CO., Hereford, equal second prize, also for *Orchids*. The best bouquet of *Roses* was shown by Mr. A. ADSHEAD, Gatley; KING'S ACRE NURSERY CO., second. Mr. ADSHEAD showed the best bouquet of *Carnations*, and Messrs. JONES AND SONS had the best bouquet of flowers, *Orchids* excluded.

For a basket of flowers, Orchids excluded, Mrs. J. NIXON won first prize, with red Carnations, *Humex elegans*, and *Selaginella* sprays—an award which did not meet with general approval; Mr. ADSEAD, second. In the class where Orchids were permitted the best basket for a drawing room was adjudged to be the one exhibited by Mrs. J. NIXON, who arranged Anthuriums, *Montbretias* and *Lilium speciosum* album very daintily. Mrs. NIXON also won first prize for a stand of flowers, with a charming design in *Gloriosa superba*, yellow Carnations, *Francoa ramosa* and *Fuchsia fulgens*.

First prize for a table decoration was won by Mrs. J. NIXON, Alderley Edge, with a light and dainty arrangement of *Lonicera scmpervirens*, *Gloriosa superba* and *Francoa ramosa*, with *Selaginella* sprays and fronds of Maiden-hair Fern; Miss NEWSHAM, Aughton, second, with a design that did not meet with general approval.

GRAPES.

A special award of £10 was made in favour of Messrs. JAS. WEBBER AND SONS, Minehead, who were the only exhibitors of twelve bunches of Grapes. They showed good clusters of Buckland Sweetwater, Alicante and Appley Towers, fair Black Hamburg and poorly-coloured Muscat of Alexandria. The general complaint was that these exhibitors failed to receive a definite award, and the opinion, in which we agree, was freely expressed that the judges should have awarded a 1st, 2nd, or 3rd prize, so as to define their estimate of the merit of the exhibit. Later in the day we were given to understand that a 3rd prize was awarded.

The best four bunches of Grapes were handsome examples of Muscat of Alexandria and Madresfield Court, shown by Lt.-Col. H. C. LEGH, High Legh Hall, Knutsford (gr. Mr. A. J. Cooke); the EARL OF COVENTRY, Croome Court, Severn Stoke (gr. Mr. W. H. Wilson), 2nd, with Muscat of Alexandria and Black Hamburg, well coloured but small berried.

The EARL OF COVENTRY won 1st prize for a pair of bunches of Black Hamburg Grapes, with weighty clusters of richly-coloured berries; Messrs. JAS. WEBBER AND SONS, Minehead, 2nd, and LADY MARY HERBERT, Styche, Market Drayton (gr. Mr. J. Birch), 3rd.

LORD HOWARD DE WALDEN, Chirk Castle (gr. Mr. J. Vert), led for Black Hamburg Grapes, two bunches; Lt.-Col. H. C. LEGH won first prize for a fine exhibit consisting of Muscat Hamburg; and Messrs. JAS. WEBBER AND SONS won 1st prizes for Alicante and for "any other black" Grapes, with Appley Towers.

For a pair of bunches of white Grapes Lt.-Col. LEGH gained premier position with Muscat of Alexandria, in very fine condition; Messrs. J. WEBBER AND SONS, 2nd; in the "any other" class Messrs. WEBBER led with Buckland Sweetwater, beautifully coloured.

DESSERT FRUITS.

The only exhibitor in the class for a collection of 30 dishes of ripe fruits, in not fewer than nine distinct kinds, arranged on a decorated table, was Lord HOWARD DE WALDEN, Chirk Castle (gr. Mr. J. Vert), who was awarded 1st prize, and a Challenge Cup for a fine exhibit of Muscat Hamburg, Muscat of Alexandria, Black Hamburg and Foster's Seedling Grapes; Ribston Pippin, Red Victoria and Emperor Alexander Apples; Clapp's Favourite and Dr. Jules Guyot Pears; Early Transparent, Jefferson, and Reine Claude du Comte Hathem Plums; Hemskirk Apricots; Dymond Peaches, Humboldt Nectarines, Figs and Melons. The whole was decorated with blush Carnations and sprays of *Francoa ramosa*.

LORD HOWARD DE WALDEN led for Peaches with fine fruits of Dymond. He was also successful for Nectarines, with a grand dish of Humboldt, with S. WITHERS, Esq., Sandhurst, Shrewsbury, second. For Apricots, A. E. O. HUMPHREY OWEN, Esq., Berriew (gr. Mr. Oakley), won first prize. Lord HOWARD DE WALDEN had the best Melon (*Emerald Gem*); Lord HOWARD DE WALDEN (a) the best Gage Plums (*Transparent Gage*); (b) the best yellow Plums (*Coe's Golden Drop*); and (c) the best Morello Cherries. First prize win-

ners in other single dish classes for fruits, were Col. H. LONSDALE, Shavington Hall (gr. Mr. Mills); Mr. S. C. MEIRE, Horley; and Mr. H. HOWELLS, Shrewsbury.

VEGETABLES.

In the open class for a collection of twelve distinct kinds of vegetables the premier award was won by Mr. W. TAYLOR, Grinshill, with good produce, his best dishes being those of Purity Cauliflower, Perfection Tomatos, Cucumbers and Duke of Albany Peas; Mr. J. JONES, Ammanford, second. For nine distinct kinds of vegetables, in a class open only to residents in Shropshire, Col. HEYWOOD LONSDALE won first prize, and showed grand specimens of Leeks, Celery and Runner Beans; Mr. H. TAYLOR, Grinshill, second.

W. J. GRESSON, Esq., led for a collection of six dishes of Potatos immune to Wart disease; he showed very clean specimens of Mr. Bresse, The Bishop, White City, Majestic, Kerr's Pink, and Abundance; Mr. W. PERKS, Lye, second. Col. H. LONSDALE was the most successful exhibitor in the class, provided by Messrs. DICKSON and Robinson, for nine distinct kinds of vegetables. In the class provided by Messrs. CLIBRANS, Mr. C. J. GWYER, Eywood, Tilley, Hereford, was first prize winner; H. WATSON SMITH, Esq., Hawthorns, Stourbridge (gr. Mr. H. Davies), won Messrs. Webb and Sons first prize with a very clean lot of nine kinds of vegetables.

In Messrs. Sutton and Son's class for nine kinds of vegetables Mr. JOHN JONES, Ammanford, led with a very fine exhibit, in which Onions, Leeks and Celery were particularly good; Mr. W. PERKS, second. In the single dish classes Col. H. LONSDALE won first prizes for Carrots, Onions, Celery, Tomatos and Turnips; E. CORBETT, Esq., Longnor Hall (gr. Mr. J. Powell), led for Cauliflowers; Mr. F. BROWN, Shrewsbury, for Runner Beans; and Mr. W. S. PARTON, Norton-in-Hales, for Peas.

NON-COMPETITIVE EXHIBITS.

MESSRS. WEBB AND SONS, Stourbridge, put up a splendid exhibit of finely grown vegetables, flanked by groups of Sweet Peas. The vegetables were superbly grown and represented this firm's special strains of the principal kinds—a very fine effort. Messrs. DICKSON and ROBINSON displayed fruits of thirty-two varieties of Tomatos from a trial of these fruits. This proved a most interesting display and afforded visitors an opportunity of comparing varieties. A new variety, labelled "1920," has very short-jointed growth, a sturdy habit and heavy trusses, and promises to be valuable in houses of low stature. Miss S. S. THOMPSON, Handsworth, exhibited a most interesting collection of Cacti and other succulents. The Rev. J. H. PEMBERTON showed a group of Roses of his own raising; Vanity, Pax, Callisto and Prosperity were the most prominent sorts.

MESSRS. ISAAC HOUSE AND SON, Bristol, displayed a set of their new forms of *Scabiosa caucasica*, ranging from pure white, through pink, lilac and several shades of mauve to the deep blue of Diamond. Early Chrysanthemums, shown by Mr. A. W. THORPE, Lichfield, were effective; the dark Lichfield Purple was a most distinct variety. Messrs. STUART LOW AND CO., Enfield, were exhibitors of Carnations; they also exhibited a few Orchids, including *Odontioda Thwaitesae*. Hardy flowers in great variety, including a selection of Phloxes, were contributed by Mr. MAURICE PRICHARD, Christchurch. The Anemones shown by Messrs. REAMSBOTTOM AND CO., Geashill, King's co., seemed to have suffered somewhat during their journey from Ireland.

Mr. H. N. ELLISON, West Bromwich, exhibited a large and interesting group of Ferns, using the tricoloured form of *Saxifraga sarmientosa* as an edging. The *Platycorium* and *Davallias* were outstanding features. Messrs. JOHN FORBES, Hawick, were represented by collections of Phloxes, Pentstemons, and Violas. Messrs. JONES AND SONS, Shrewsbury, contributed floral designs, a group of *Lilium longiflorum*, and a collection of Sweet Peas. Mr. EDWIN MURRELL, Shrewsbury, set up an effective exhibit of Clematises and Roses, the

latter filling a large space and including many of the newer sorts.

About three dozen stately spikes of glorious Hollyhocks were exhibited by Messrs. J. VERT AND SONS, Saffron Walden, with specimen blooms of leading varieties arranged on boards. Primrose Queen, Walden Primrose, Bullion, and Queen of Yellows were yellow sorts of special merit. Messrs. W. ARTINDALE AND SON, Sheffield, contributed a display of well-grown Gladioli, which attracted great attention, and was a most meritorious exhibit. Messrs. ALLWOOD BROTHERS, Haywards Heath, made a special feature of varieties of *Dianthus Allwoodii*, and filled a large space with sheaves and bowls of attractive and dainty blooms.

THE KING'S ACRE NURSERY Co., Hereford, exhibited extensively, and filled a big bay in the large tent with a splendid display of freely-cropped fruit trees in pots. Of Gascoigne's Scarlet James Grieve, St. Edmund's Russet, Gloria Mundi, and Washington Apples, Beurre Foutqueray, Doyenne du Comice, and Conference Pears, there were grand specimens. This display, together with three dozen baskets of picked fruits of Apples and Pears, a bright group of hardy flowers, and a collection of Roses, made up a display of outstanding interest and importance. From the Royal Horticultural Society's Garden, Wisley, Mr. S. T. WRIGHT brought up a collection of Grapes. Some of the bunches had suffered a little during their journey from Surrey, but nevertheless there were good bunches of Madresfield Court, Foster's Seedling, Chasselas Napoleon, Muscat Hamburg, Muscat of Alexandria, Prince of Wales (excellent), Lady Hastings, Directeur Tisserand, Buckland Sweetwater, and Black Hamburg.

MESSRS. BLACKMORE AND LANGDON, Bath, showed superb Begonias; the form and size of the blooms and their wonderful colouring attracted general attention. The three baskets of drooping Begonias added a pleasing feature to a beautiful exhibit. Mr. HERBERT JONES, Coombe Down, Bath, filled, at short notice, a large bay in the plant tent. He arranged a formal garden, with paved walks around a central pool. Groups of hardy flowers lent pleasing colour, while big stone bowls and seats lent an old-world character to the scene. Messrs. BEES, LTD., Liverpool, exhibited a grand lot of hardy flowers, but reduced the effectiveness of their group by over-crowding. The same firm's excellent Rose blooms were better displayed. Alpine and herbaceous plants of lowly growth and Water Lilies were contributed by Messrs. BOWLES AND SKARRATT, Cheltenham.

The formal garden arranged by Messrs. BAKERS, Wolverhampton, was a large contribution, and one that was deservedly admired. Overcrowding had been avoided, consequently the semi-circular border of Phloxes, Gladioli, Coreopsis, *Montbretias* and Poppies made a handsome setting for the bronze figures, the little beds of Scabious and Astilbes, and the Lily pool.

THE SHROPSHIRE COUNTY AGRICULTURAL COMMITTEE exhibited a series of seedling Potatos, raised with a view to obtaining free cropping varieties immune to Wart Disease; dried and bottled fruits and vegetables; and other interesting items. Mr. W. WELLS, JUN., Mersham, contributed a handsome display of Delphiniums and other hardy flowers. Messrs. HERD BROS. contributed a fine lot of Sweet Peas, and Mr. J. JONES, Wem., showed Violas. Messrs. JARMAN AND CO., Chard, exhibited Roses and border flowers. Mr. C. VICKERS, Leicester, showed bouquets, and Mr. A. DUNTON exhibited Roses in quantity. Messrs. J. AND W. BIRCH, Sefton, exhibited immune varieties of Potatos. On behalf of the Ministry of Agriculture, Mr. VINCENT BANKS exhibited dried and bottled fruits and vegetables.

MEDAL AWARDS.

The following awards were made to non-competitive exhibits:—

Large Gold Medal.—To Messrs. BEES, LTD.; Messrs. BAKERS; KING'S ACRE NURSERY Co.; Messrs. JONES AND SONS; Messrs. DICKSON AND ROBINSON; Messrs. E. WEBB AND SONS; and Mr. E. MURRELL.

Gold Medal.—To Mr. H. N. ELLISON; Messrs. HERD BROS.; and Messrs. W. ARTINDALE AND SONS.

Small Gold Medal.—To Messrs. ALLWOOD BROS.; Messrs. J. VERT AND SONS; Mr. A. THORPE; MINISTRY OF AGRICULTURE (Mr. Vincent Banks); Messrs. ISAAC HOUSE AND SON; Mr. A. R. BROWN; Messrs. JARMAN AND CO.; and Mr. W. WELLS, JR.

Large Silver Medal.—To SALOP COUNTY COUNCIL EDUCATION COMMITTEE; Mr. H. JONES; Messrs. J. FORBES; Mr. C. VICKERS; Messrs. STUART LOW AND CO.; Mr. MATRICE PRICHARD; and Mr. E. J. BAYLEY.

Silver Medal.—To Messrs. BLACKMORE AND LANGDON; Messrs. BOWLES AND SKARRAAT; Mr. JOHN JONES; Mr. A. H. WELHAM; Rev. J. H. PEMBERTON; Mr. H. CLARKE; and Messrs. J. and W. BIRCH.

Small Silver Medal.—To Messrs. REAMS-BOTTOM AND CO., and to Miss THOMPSON.

Obituary.

John Gilbert Baker.—The death of Mr. John Gilbert Baker, F.R.S., will be mourned not only throughout the world of science, but in the world of horticulture, for he has been truly described as the gardeners' botanist. Whoever had occasion to meet him will feel a reverence for his noble life, his devotion to the science which is so intimately acquainted with horticulture, and his outstanding personality, for his loving nature endeared him to all. To many generations of Kew men he was revered and esteemed, and he will long be remembered as one of the outstanding personalities which our National botanical garden has produced. He was born at Guisborough, a little village on the Cleveland moors, Yorkshire, in January, 1834. Early in life he began to exhibit a love of nature, and while quite a boy collected and dried numerous British plants; it was not long before he became a noted amateur, British botanist. The study of this science was at first only a hobby, but he continued to acquire fame as an authority on British plants, especially during the time he was Curator and Secretary of the London Botanical Exchange Club. His work attracted the notice of the authorities at Kew, and in 1866 he was offered, and accepted, a post as Assistant in the Herbarium. Here he laboured with patience and steadfast success, until, on the retirement of Professor Oliver in June, 1890, Mr. Baker was made keeper of the herbarium and library. Mr. Baker's special domain was in the region of systematic botany, and he will rank as one of the foremost systematists this country has produced. His first important work was the completion of the *Synopsis Filicum*, begun by the late Sir William Hooker; and he prepared a second edition in 1874, and brought the list of Ferns up to date in the fifth volume of the *Annals of Botany*. His handbooks on certain genera, including Liliaceae, Amaryllideae, Iridaceae and Bromeliaceae, rank as classics, and many of them were first published in these pages. But this by no means exhausts the extent of Mr. Baker's literary labours. He compiled several floras, including *Flora of the Lake District*, *Flora of the Mauritius and the Seychelles*, and *The Botany of the Cumberland part of the Pennine Range*. Leguminosae and Compositae also received very considerable attention at the hands of Mr. Baker, whose contributions are also to be found in Martins' *Flora Brasiliensis*, and in the various Colonial floras prepared at Kew. His delightful little work on *Botanical Geography*, largely reprinted from these pages, was the first book of its character, and it was issued with the desire "that gardeners and other learners in biology should be encouraged, as much as possible, to acquire comprehensive and correct ideas of the laws and leading facts of plant distribution." As showing the varied interests and talents of this distinguished student of nature, we may point to his interesting book dealing with *The Studies of the Botany, Geology, Climate and Physical Geography of North Yorkshire*; also *The Fathers of Yorkshire Botany*, both of which show that he retained a deep interest in the county which gave him birth. Reference to the catalogue of the library of the Royal Botanic

Gardens, Kew, will show his true position as an author in botanical literature. Mr. Baker retired from Kew in 1899, and has resided at 3, Cumberland Road, ever since, and there he passed away on the morning of the 16th inst., in his 87th year. During the long years of his retirement, he continued to take the greatest interest in his work as a botanist, and his intellect was almost as keen as ever up to the end. It will be remembered that so recently as December, 1917, he contributed an erudite article to these pages on the "Botany and Physical Geography of the Holy Land." Mr. Baker was not only conversant with plants, and a pioneer that brought into prominence the principal groups of plants in a manner that facilitated the researches of his successors, he also possessed the happy gift of being able to impart his knowledge to others in a most lucid, emphatic, concise and admirable method, so that he was able to bring out the salient points of his subject, not overlooking detail, but always treating it with a due sense of proportion. Many hundreds of young gardeners at Kew have formed their first real acquaintance with the nature and habits of plants through his enjoyable lectures, and it was his wont to conduct his pupils through the gardens and study the living plant upon the spot. Many honours fell to this worthy scientist; he was one of the original sixty distinguished horticulturists to receive the Victoria Medal of Honour in Horticulture. He was also a Veitch Medallist, and held the honorary D.Sc. degree, conferred on him by Leeds University. His portrait, from the brush of Mr. Joseph W. Forster, was hung on the walls of the Royal Academy in 1893, and was reproduced as a supplementary illustration in the *Gardeners' Chronicle*, June 24th, 1893. But his greatest honour was the esteem in which he was held in the world as botany and horticulture, for his was a noble nature, loving, dignified, and kind. Mr. Baker's son, Edmund, is a member of the staff of the Botanical Department of the British Museum. The funeral took place on Thursday, the 19th inst., in the Friends' burial ground, London Road, Isleworth, where many assembled to pay their last tribute to his memory.

ANSWERS TO CORRESPONDENTS.

ANALYSIS OF SOIL: *V. G.* If you are a Fellow of the Royal Horticultural Society you are entitled to have your soil analysed at a reduced fee. Full particulars of the procedure to be followed may be obtained on application to the Secretary of the Society, Vincent Square, Westminster, S.W.

BLACKBERRY: *W. A. J.* In the absence of flowers and foliage it is not possible to determine the varietal form of the Blackberry you have found growing wild. The shape of the fruits and the style of the cluster suggests that it is the Parsley-leaved Blackberry, which is found wild in some parts, and quite frequently appears as a garden escape, as the seeds are often carried long distances by birds.

FORMAL GARDENING: *South Africa.* Formal gardening is not fashionable now-a-days, consequently there are no modern books which deal extensively and in detail with designs for carpet bedding and other formal arrangements of flowers for the summer.

FRAGRANT ROSES: *O. M.* The following are a dozen fragrant, free-flowering Roses:—Crimson:—General McArthur, Hugh Dickson, Richmond and Victor Hugo; Pink:—Mme. Abel Chatenay, Mme. Maurice de Luze, Mrs. Bryce Allan, Lady Alice Stanley, Gustav Grunerwald and Mrs. John Laing; Blush:—Augustine Guinoisseau and Ophelia: If climbers are desired Zephyrine Drouhin (semi-climber), Evangeline and Francois Juranville may be substituted for three of the foregoing.

GARDEN CALENDAR: *A. R.* The *Calendar of Garden Operations*, which can be supplied by our publishing department, price 2s. 11d., post free, together with the reminders published under the "Week's Work" in these pages, should provide you with the information you require.

GLUCOSE AND SUGAR FOR JAM MAKING: *T. R. S.* The Ministry of Agriculture advises the use of sugar and glucose for the making of Plum jam. The recipe is as follows:—8 lb. of unripe Plums, a little water, 6 lb. sugar, 2 lb. glucose. The water should be added to the fruit directly the latter is placed in the preserving pan, and, when the fruit becomes heated, the sugar should be added and stirred in until it is dissolved; then add glucose (Corn Syrup) and boil the whole rapidly until the jam will "set" when a little is placed on a cold plate. The approximate weight of jam, if these figures are followed, should be 12½ lb.

HARDY FRUITS: *E. J.* For your particular purpose you will find *Fruit and its Cultivation*, by T. W. Sanders, a useful publication. This may be obtained, post free for 8s. 3d., from our Publishing Department.

HORTICULTURAL INSTRUCTOR: *C. W.* The qualifications for a post of Horticultural Instructor to a County Council are a practical knowledge of horticultural work, a good general knowledge of kinds and varieties of fruits, vegetables and flowers, and a working knowledge of the sciences intimately associated with the practice of horticulture. A good general education and the ability to teach and to speak in public are also of the greatest importance, and we need hardly remind you that if you have successfully passed the Horticultural Society's examination in horticulture this will greatly increase your opportunities of obtaining a post. As the cultivation of vegetables appears to be your weak point, you should obtain employment for a season in some first-class private or market garden where vegetables are thoroughly well cultivated.

MACEDONIAN MELONS: *C. M. P.* The failure with the Melons raised from seeds sent you from Macedonia is probably due to lack of heat. You state that the plants are in frames. If the frames are heated by means of a hot bed or hot water, there should be no difficulty in fruiting the plants, although a heated pit would provide more favourable conditions.

MICE IN A ROCK GARDEN: *B. O. H.* If numbers of mouse traps suitably baited are placed in the rock garden the infestation of mice should be greatly reduced. Provided domestic animals are not likely to touch it, one of the poisons supplied for the destruction of mice may be placed among the plants. Efforts should be made to discover and destroy the nests of the mice.

MUSHROOM CULTIVATION: *M. V.* So far as we are aware the one or two small books dealing solely with the cultivation of Mushrooms are out of print. You will find an instructive account of Mushroom cultivation in Mr. E. Beckett's book on *Vegetables for Home and Exhibition*, while the subject is dealt with from a commercial point of view in *Commercial Gardening*, a four-volume work issued by the Gresham Publishing Company.

ROYAL HORTICULTURAL SOCIETY'S CERTIFICATE: *F. R. D.* To obtain the Royal Horticultural Society's certificate it will be necessary for you to sit for and successfully pass the Society's examination in horticulture. Full particulars of the examination may be obtained on application to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W. A stamped addressed envelope should accompany the application.

TOMATO FRUITS DISEASED: *J. P.* The disease is the common Tomato Rot (*Macrosporium* Tomato). Remove and burn all diseased fruits and affected foliage, and spray the plants with a solution of potassium sulphide. Maintain a dry and buoyant atmosphere in the house, and be careful not to supply the roots with an excess of water or liquid manure.

Communications Received.—W. H. & Co.—A. McB.—Dr. D.—N. A. C.—C. M. H.—J. R. M.—R. P. B.—C. G.—R. G. W.—F. C.—W. H.—T. M. S.—A. H.—H. G. N.—P. E. N.—J. S. W.—K. & Son—W. T. E.—G. P.

THE Gardeners' Chronicle

No. 1757.—SATURDAY, AUGUST 28, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 59.7°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, August 25, 10 a.m.: Bar. 30.0; temp. 58°. Weather—Dull.

The Pollen of Barley.

The pollens of different plants exhibit remarkable degrees of tenderness or hardness to external conditions. In the case of not a few plants it is possible to preserve pollen for a considerable time by keeping it in tubes containing a quantity of calcium chloride sufficient to maintain the air in a fairly dry state. Sulphuric acid of suitable dilution has also been used with success, though, needless to say, care has to be taken in either case to protect the pollen from contact with the reagent. Citrus and no doubt other kinds of pollen may be kept for a time by enclosure in a tube from which the air has been exhausted. The advantage of discovering methods for keeping pollen is evident; for it enables the hybridist without further trouble to attempt the pollination of species or varieties which flower at a season different from that at which the male parent sheds its pollen. The grasses seem to differ from the majority of plants in the possession of extremely delicate pollen. In Nature this does not appear to be a drawback, for the grasses, wild and cultivated, generally seed abundantly. At the same time it may be a factor in limiting the range of members of this family. So delicate is the pollen of Barley that according to recent observations* it may be drowned by breathing on it. Pollen exposed on a glass slide and breathed upon fails to develop. Exposure for ten minutes to ordinary air is also fatal to the pollen of this plant. Its life is moreover as fugitive as it is frail. Even in the field the life of Barley pollen is measured by hours. Before the anthers dehisce but few of their pollen grains are in a state to fertilise ovules and soon after dehiscence

of the anthers, they lose their power of producing germ tubes. The summary pollination methods of cereals and other grasses take on a new meaning in the light of this fact. Only when moisture and temperature alike are sufficient does the anther dehisce, and the conditions which provoke dehiscence are those which promote the growth of the tube of the pollen grain. Country children have discovered the former fact and take delight—or used to—in causing the all-but-ripe ears of grasses to pop by placing them in their warm young mouths. In the grasses as in other families it is the female that waits—and endures. The stigmas of barley remain receptive for some six days—about as many as are the hours during which a pollen grain retains its viability. Barley pollen is fastidious as well as frail and fugitive. The pollen of most plants will swell and throw out its germ tube in sugar solutions of a fairly wide range of concentration; Barley pollen will not. In strong solutions it shunks, it weak it bursts and in none apparently will it grow. The only method whereby the authors of the work cited succeeded in causing Barley pollen to germinate was by enclosing it in a small glass chamber—supplied with moisture by evaporation from a small piece of leaf enclosed in the chamber—and by placing the moist chamber on a window ledge. When, however, the right conditions are hit off, Barley pollen germinates at an almost incredible speed. Five minutes suffice for a grain to throw out a tube of 1/10 of a millimetre—no great length it is true, yet in respect to the smallness of the grain and the shortness of the time, a marvellous performance. In spite of its capricious pollen, Barley in nature generally does very well, and this, as suggested already, is probably because if the right conditions are not forthcoming the anthers do not dehisce but await kindlier conditions. Some varieties of Barley, however, are apt to be infertile. Thus Primus, though it yields well in the west, may in bad years fail in Minnesota, so that fine spikes set few kernels. Though it may not console the Minnesota farmer for the loss of his crop, and though we refuse to accept the cynical aphorism that there is an element of satisfaction in the misfortunes of our friends, we cannot but be interested to learn that the material prosperity of a community of Barley farmers may depend on scarcely perceptible and very brief meteorological conditions—such, for example, as a spell of warm sunshine after a dewy night, which alone will release the pollen from the anthers with force enough for it to reach the stigma and will kindle it to its work of pollination and of fertilisation. The brief period during which the flowers of cereals remain open, and the accurate timing of their opening in the early morning hours represent a very necessary coddling of a delicate and essential member of the cereal household.

Legacy to a Gardener.—The sum of £200 has been bequeathed by Mr. J. A. Ross, stock-broker, of Edingham, Surrey, to his gardener, Mr. Harry Jackson.

Long lost Antique Discovered by a Gardener.—A piece of sculptured marble, recently purchased by Mr. Ernest Dixon, landscape gardener of Putney, has been recognised by the British Museum authorities as a valuable Roman antiquity lost to the world since 1809. The sunk formal gardens exhibited by Mr. Dixon at the R.H.S. Chelsea exhibitions have been much admired, and the stone was presumably purchased by him for use in some such garden scheme. The sculpture measured 5 feet by 2 feet and was bought by Mr. Dixon from a contractor at St. John's Wood, in whose yard it has

lain for the past 50 years. The marble is fashioned in three half-length, full-face draped busts, representing Ampudius, a shrewd old man with strongly marked features and thin, compressed lips, and his wife and daughter.

Mr. A. H. Smith, keeper of Greek and Roman antiquities at the Museum, states that Ampudius lived probably between B.C. 25 and A.D. 25. The sculpture was first reported by Bianchini, of Verona, Italy, who was copying Roman inscriptions between 1706 and 1715. Ampudius is not destined to enjoy the bright association of flowers, but has been placed among the Roman antiquities in the British Museum.

Scottish Society for Research in Plant Breeding.—At a recent meeting of the general committee of the society instituted for research in plant breeding in Scotland, the chairman, Mr. Chas. Douglas, D.Sc., submitted the proposed rules and constitution, and these were adopted. It was decided to adopt the title of the Scottish Society for Research in Plant Breeding. The following first board of directors was appointed:—D. L. Rowe, Dunbar; Sir James Campbell, LL.D. Edinburgh; Sir Isaac Connell, S.S.C., Edinburgh; William Cuthbertson, V.M.H., Edinburgh; J. Inglis Davidson, Saughton Mains; James W. Drummond, Stirling; George A. Ferguson, Surralade; David Ferrie, of Parbroath; Lord Forteviot, Perth; A. B. Fulton, 118, Queen Street, Glasgow; James Gardner, Cardonald; Sir Archibald Buchan Hepburn of Smeaton, Bart., J. H. Milne Ross, Canonbie; W. W. Hope, Prestonkirk; John M'Graig, Stranraer; J. T. M'Laren, The Leuchell, Dalmeny; A. T. M'Robert, Aberdeen; C. G. Mercer, Dalkeith; Principal W. G. R. Paterson, West of Scotland Agricultural College; C. B. Shields, Tranent; Sir David Wilson of Carbeth, Bart.; together with the first trustees as follows:—The Secretary for Scotland; Charles Douglas, D.Sc., C.B., of Auchlethan; James Elder, Athelstaneford Mains, Drem; David Bell, Leith; John Finlayson M'Gill, Ayr, and four persons to be nominated by the Board of Agriculture for Scotland. The chairman acknowledged the great help they had received from the Board of Agriculture, and especially from their colleague, Sir Robert Greig. He also moved a vote of thanks to Mr. Stirling for all the valuable assistance he had given. It was intimated that up to date a total sum of £21,178 had been collected and promised, which, with the prospective Government grant, represented a sum of £42,344.

Experiment in the Eradication of Onion Smut.—The appearance of Onion Smut in several parts of England has led the Ministry of Agriculture not only to make the disease notifiable, but also to undertake trials with a view to finding some way of checking or eradicating this disease which has caused serious damage to Onions in America. The fungus causing the disease, *Urocystis cepulae*, fortunately only attacks Onions when in the seedling stage, although a plant once attacked at this stage may grow to quite a fair size before it succumbs. Although it can be detected at an earlier stage, it is usually not until the spores of the fungus have broken through the epidermis of the bulb or leaf, in the form of long, black streaks, that the ordinary grower detects the presence of the disease. In America this disease has been controlled to a certain extent by treating the soil with formalin. The fungus is carried on from one year to the next by means of the infected soil, new soil becoming infected by planting diseased seed. For the purpose of the experiment, infected ground in the north-east of England was used on which Onions, grown on a commercial scale, were planted. The treatment consisted in applying a weak solution of formaldehyde at the time of sowing, the strength being 1 pint of formaldehyde (40 per cent.) to 16 gallons of water. 22 drills were drawn out with a hand hoe. The seeds (White Lisbon) were sown on May 12th, and then a solution was applied by means of a watering can to 14 of the rows at the rate of 1 gallon to 150 feet. The seeds were then covered over and the rows trampled down. The remaining 8 rows were not treated, but were left as controls. On the 18th July, the plots were inspected and carefully examined, the plants being about 6

* "Germination of Barley Pollen." By Stephen Antony and Harry V. Harlan. *Journal of Agricultural Research*, XVII., 10, Washington, D.C. February 16, 1920.

inches high and very vigorous in growth. A careful examination was made both of the control rows and the trial rows. On the treated rows no disease could be found, but there were only 6 plants showing signs of the disease on the control plots. The grower thought that the absence of the disease was probably due to the excellent conditions prevailing at the time of germination, the plants quickly reaching the stage at which they become resistant. A similar trial on a different part of the garden gave better results. Here three out of 8 rows were treated. On examination the treated rows yielded 2 per cent. of infected plants while the 2 untreated rows gave 25 per cent. of diseased plants. In this case it was evident that the application of formalin at the time of sowing had considerably reduced the amount of disease, but further experiments are contemplated in order to get more definite results.

Control of Dandelions in Lawns.—Experiments made at the Geneva Experiment Station, New York, during the past eight years show that dandelions may be eradicated from lawns by spraying with a solution of sulphate of iron. The treatment is comparatively inexpensive, and does not materially injure the grass. Usually, four or five applications are required, and the strength should be $\frac{1}{2}$ lb. of sulphate of iron to each gallon of water. The first spraying should be made in May just before the first flowering of the dandelions. One or two others should follow at intervals of three or four weeks; and, finally, one or two more in late summer or autumn. During hot, dry weather of midsummer the spraying should be discontinued because of the danger of injury to the grass. A conspicuous blackening of the lawn which follows each spraying soon disappears if the grass is growing vigorously. Of the other common lawn weeds some are killed while others are but slightly injured by spraying. Unfortunately, White Clover, also is killed. Tests of certain methods of supplementary treatment, such as re-seeding, liming of the soil, and the use of commercial fertilisers and stable manure, were made in conjunction with the spraying experiments. The results obtained warrant the strong recommendation that spraying be supplemented by the use of fertilisers and the application of grass seed in the spring and fall of each year. With proper management a lawn may be kept practically free from dandelions by spraying every third year. The cutting-out method of fighting dandelions is laborious and ineffective unless the greater part of the root is removed. Shallow cutting, unless done frequently, is worse than none at all, because each cut-off root promptly sends up one or more new growths.

Accidents at a Flower Show.—Two mishaps occurred at Shildon flower show, county Durham, held on the 21st inst. During a military tournament by the 7th Hussars, from York, at which there were about 10,000 spectators, a horse ridden by two soldiers jumped the barrier into the crowd. Several people were knocked down, and five suffering from shock and bruises were attended by ambulance men, but were all able to proceed home. Later, during a pony scamper, a pony jumped the railings at practically the same spot, and two women were knocked down.

Agricultural Wages.—The order of the Agricultural Wages Board under the Corn Production Act, 1917, increasing the minimum rates of wages at present in force for male agricultural workers of 21 years of age and over throughout England and Wales, came into force on the 23rd inst. The general effect of the order is to increase the minimum rates for adults by 4s. a week. In 19 of the wages areas the minimum will in future be 46s., and in the other 20 areas it will range from 46s. 6d. to 50s. 6d. (in the case of Northumberland and Durham). Overtime rates are proportionately increased. As nursery hands are included in the scope of the Act the new rates will have a direct bearing on the horticultural trade.

Visitors at the R.H.S. Meeting.—Among visitors to the Royal Horticultural Society's meeting on Tuesday last there were several from distant lands. Mr. E. H. Wilson, from the

Arnold Arboretum, was present, and Mr. Harry Davies, another old Kewite from Lucknow, met many old friends. Visitors from the United States included Mr. W. H. Duckham, from New Jersey, one of the largest growers of Roses for the New York flower market; Mr. David Burpee, of Philadelphia; and Mr. Farquhar.

Presentation to Mr. T. Hay.—As already announced in these columns, Mr. T. Hay has left Greenwich Park to take up the superintendence of Regent's Park. He made numerous friends while at Greenwich, and some of his admirers, headed by the Mayor of Greenwich, Alderman Sir Charles Stone, with his mace bearer, attended at the Ranger's House, Greenwich Park, a few days ago, for the purpose of honouring Mr. Hay with a tangible evidence of their appreciation of his services. The Mayor made the presentation on behalf of the subscribers to the testimonial—which took the unusual form of a bag of fifty golden sovereigns, together with a wallet of treasury notes—and referred in very appreciative terms to the high esteem in which Mr. Hay was held and to the excellence of his horticultural work. Mr. Hay suitably responded. A vote of thanks to the Mayor, "proposed by a Scotsman, seconded by a Welshman and supported by a gathering of Englishman," concluded this interesting function.

Horticultural Society's Outing.—Upwards of 80 members and friends of the Brighton, Hove and Sussex Horticultural Society visited Crawley, on Thursday, the 19th inst., on the occasion of the Society's annual outing. The journey was made by motor coaches and the programme included a visit to Messrs. J. Cheal and Sons' nurseries, where the party was conducted round by Mr. Joseph Cheal. A visit was also made to Tilgate, the residence of Mr. J. A. Nix, and that gentleman kindly provided tea. The general opinion was that the outing was one of the most successful in the history of the Society.

Retirement of a Nurseryman.—The *Southport Guardian* announces the retirement from business of Mr. W. H. Stansfield, nurseryman, Kew Nurseries, Southport. Mr. Stansfield has travelled a great deal in searching for new and interesting plants and is the author of several pamphlets and treatises, including *Holiday Rambles in Switzerland and Italy*, *Switzerland Revisited*, *Botanical Rambles in the Central Pyrenees and Spain*, *The Ice Age in Britain*, *The Flora of Southport*, and *Distribution of Alpine Plants in Britain*. He has just started on another trip, this time to the Central Pyrenees, in pursuit of the study of plant life. When the British Association met at Southport, Mr. Stansfield was asked to prepare an up-to-date record of *The Flora of Southport*, within a 15 miles radius of the town, and the results were published in the handbook of the British Association's meeting. During one of his many botanical rambles in Scotland, he collected, on the Clova mountains, *Eriophorum alpinum*, which had not been seen since the days of Don. He is also an extensive traveller in Ireland, where he has visited numerous mountains in search of alpine flowers.

Increase of School Gardens.—One of the effects of the war has been the large increase in the number of school gardens attached to elementary schools. The result is due to the spread of the allotment movement and to the circular issued by the Board of Agriculture in July, 1917, recommending local education authorities to give special attention to the cultivation of vegetables, and especially Potatoes, in school gardens. The increase is very remarkable in certain counties, notably in Durham, where the area has been increased by 40 acres; in Herefordshire by 27 acres, and in Buckinghamshire and Lancashire by 16 acres and 10 acres respectively. The development of school gardens in certain towns where the conditions of soil and climate were unfavourable was also remarkable. The figures for the school year 1919-20 are not yet available. In 1918-19 gardening was taught in 4,485 elementary schools and 31 centres in England as compared with 2,957 elementary schools and 22 centres in 1913-14. The increase in Wales was equally striking. Gardens in Scotland have been laid out in 207

schools, and special grants are allowed for this purpose.

Appointments for the Ensuing Week.—Tuesday, August 31: Newcastle Society's Annual Exhibition (3 days). Wednesday, September 1: Glasgow and West of Scotland Society's Show (2 days); Duns Society's Show. Thursday, September 2: Greenock Society's Show (2 days). Friday, September 3: Alloa Society's Show (2 days); Coatbridge Society's Show; Darvel Society's Show. Saturday, September 4: Bearsden Society's Show; Coldstream Society's Show; Crieff Society's Show; Dalkeith Society's Show; Dalrymple Society's Show; Douglas Society's Show (Lanarkshire); Drumchapel Society's Show; Eaglesfield Society's Show (by Ecclefechan); Falkirk Society's Show; Gairdoch Society's Show; Cowlares Society's Show; Gosrock Society's Show; Johnstone Society's Show; Kilmarnock Allotment's Society's Show; Mauldslee and Rosebank Society's Show; Menstrie Society's Show; Neilston and Uplawmoor Society's Show; Polmont Society's Show; Rutherglen Society's Show.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Cropping a Kitchen-garden:* When one has determined upon the best system of cropping, the greater difficulty often remains behind, viz., to get the gardening man to follow it out, without a constant supervision, irritating to both master and man. My way of thinking is, that the more directions a man has in white and black, and the less he is interfered with, by word of command, the better; and if it were not so, yet surely, if practicable, it is desirable, that the master should be able to decide once for all, in order that he may have leisure to devise new plans on other subjects. Suppose any of your readers approve of the course of cropping, and mean to follow it, I would advise them this autumn to divide their garden into four portions, and having procured 20 neat stakes, and painted the numbers from (1) to (20) upon them, to sub-divide these four portions each into five sub-divisions, and to place one stake at the corner of each of the 20 sub-divisions. The numbers for the first of the four portions will be (1), (5), (9), (13), (17); of the 2nd, (2), (6), etc., and so on; a list of successive crops must then be made out from the tabular form I sent you (with any variations thought desirable), setting them (with a bracket where two crops are got in one year) against their respective numbers, which are given in the corner of each compartment. Your man has now got his garden divided into 20 pieces and numbered, and he has got a list of 20 crops for the year also numbered; and all he has to do is, to put each crop into its corresponding border, always considering (what he also sees by his list) what is to follow it the present or the next year. All that now remains to be done is, to go round at the commencement of each year, and take up stake (20), and put it where stake (19) stood, (19) going to (18), and so on, till at last (1) will occupy the hole that (20) had left. In old gardens it will probably be desirable to divide the whole into eight portions, whereof four will be of the best and most open ground, four of the worst—a sort of weighing meat to be taken with the best joints. Nevertheless, each pair of portions will be divided into five between them; and in altering the stakes each year, those of any one pair of portions may be interchanged, where they allow of it without leading to confusion, so as to keep the best ground for the crops that most want it.—*G.U., Gard. Chron., August 30, 1845.*

Publications Received:—*Culinary Herbs* Mrs. M. Grieve, British Guild of Herb Growers, 3s., post free. *An Account of the Herbarium of the University of Oxford*, S. H. Vines and G. Claridge Druce, The Clarendon Press, Oxford, 1s. 6d. *Notes from the Royal Botanic Garden, Edinburgh*, His Majesty's Office, Edinburgh, 9d. *Journal of Genetics*, Vol. 10, No. 1, W. Bateson and R. C. Punnett, University Press, Cambridge, 12s. net. *Keys to the Orders of Insects*, Frank Balfour-Browne, The University Press, Cambridge, 7s. 6d. net.

FLORISTS' FLOWERS.

DAHLIA NAMES.

As one who has a fairly wide acquaintance with Dahlia literature, I was interested in the short article on p. 80, although it is doubtful if any useful purpose can be served by attempting to compile a "complete" alphabetical list of Dahlia names, presumably past as well as present ones. "No full list has been compiled for many years past"—true, and if by "full" "complete" is meant, such a list never has, and never will be compiled. The thing is impossible, notwithstanding that the Dahlia is quite a modern introduction when compared with other favourite florists' flowers, the Carnation, the Tulip, and others to wit.

To begin with, there are the original introductions—Cavanilles' *D. pinnata*, *D. rosea*, and *D. coccinea*; then follow their numerous seminal varieties at home and abroad. After the doubling of these old varieties, which were all single, there was the development of the old show flower or cricket-ball style, by thousands, which were put on the market by English and Continental raisers. The catalogues of most of these people, even during the palmy days of the Dahlia, which lasted from about 1825 to 1860, are absolutely unobtainable. And mere names are surely of little account unless accompanied by other details, such as section, raiser's name, colour and date.

The note refers to Professor Norton having at hand for reference several hundred catalogues covering the period from 1890 to 1920, but of what use are those compared with the Dahlia catalogues required from 1830 to 1890? Judging by the sources of information stated to be at hand for the use of the compiler, "completeness" seems to be about the least possible part of this intended list of all known Dahlia names.

If the original catalogues of the older Dahlia specialists are not to be had, the compiler must depend on secondary evidence. And this must be gleaned from many other sources than those indicated in your issue for the 14th August.

There are perhaps many names to be picked up in the botanical and quasi-botanical works published in the early decades of the 19th century. A few, for instance, quoted off hand are the *Hortus Berolinensis*, the *Botanical Magazine*, the *Botanical Register*, the *Botanist's Repository*, *Sweet's Florist's Guide*, and *Sweet's British Flower Garden*.

The next best thing would be to consult some of the old Dahlia treatises, especially the French and German. Jacquin's *Essai*, and Pirrolle's treatises, to say nothing of some of the German works of about the same period, would give a splendid crop of names of flowers long since forgotten.

I had almost overlooked the *Annual Dahlia Register*, which mentions at least 750 varieties well-known in 1836. Then comes an enormous flood of monthly periodical literature, such as *The Floricultural Cabinet*, *The Florist*, *The Florist's Journal*, *The Midland Florist*, and what we may call the Glennv publications, *Gossip for the Garden*, etc., all brim full of Dahlia news, reports of Dahlia shows, and other matter from which hundreds of varietal names may be gleaned.

When the activity of the German raisers is considered, such men as the Deegens, Sieckmann, and others around Kowitz, where the pompon Dahlia was first produced in 1850, and from whence large numbers of newly raised Dahlias were imported into this country is considered, it is certain that no list of Dahlia names is ever likely to approach completion without reference to the old German periodical gardening press of half a century to a century ago. The modern publications, as here, are only of part value in the search.

When all these, and other sources have been exhausted and the result finally tabulated and arranged in alphabetical order it will be prudent, I am sure, for the compiler not to entitle his work, "A Complete List of all Known Dahlia Names,"—C. Harman Payne.

HYBRIDS OF GLADIOLUS PRIMULINUS.

In the hands of hybridists the beautiful *Gladiolus primulinus* has become the parent of an elegant race of garden flowers. In most cases the hybrids exhibit a marked likeness to the distinct species which came to us from near the Victoria Falls; but while the form and elegance of *G. primulinus* have been retained, the colour of the flowers varies considerably, and there are varieties of various shades of yellow, pink, salmon, flame and orange. In other cases, however, hybrids have been raised which have large and stiffer flowers, more like those of the *gandavensis* group; therefore they lack the grace of those hybrids which more nearly approximate to *G. primulinus*. There is no doubt that the *primulinus* hybrids seed freely

of quality or of colour, rather than under a multitude of varietal names. The two varieties illustrated (Fig. 45) were exhibited by Messrs. E. H. Krelage and Son before the Royal Horticultural Society on July 27. The variety *Hermione* has clear, salmon-coloured flowers, with reddish marks on the inner segments, while the variety *Atalanta* has flowers of a light shade of Apricot without any marking. Both show the graceful form of *G. primulinus*.

At recent meetings of the Royal Horticultural Society, Messrs. Kelway and Son, Major Churcher, and Messrs. R. Veitch and Son, have all exhibited novelties of this fine race of *Gladiolus*, and doubtless other raisers will, in the near future, show how valuable *G. primulinus* is as a parent in obtaining choice forms of this popular border flower.

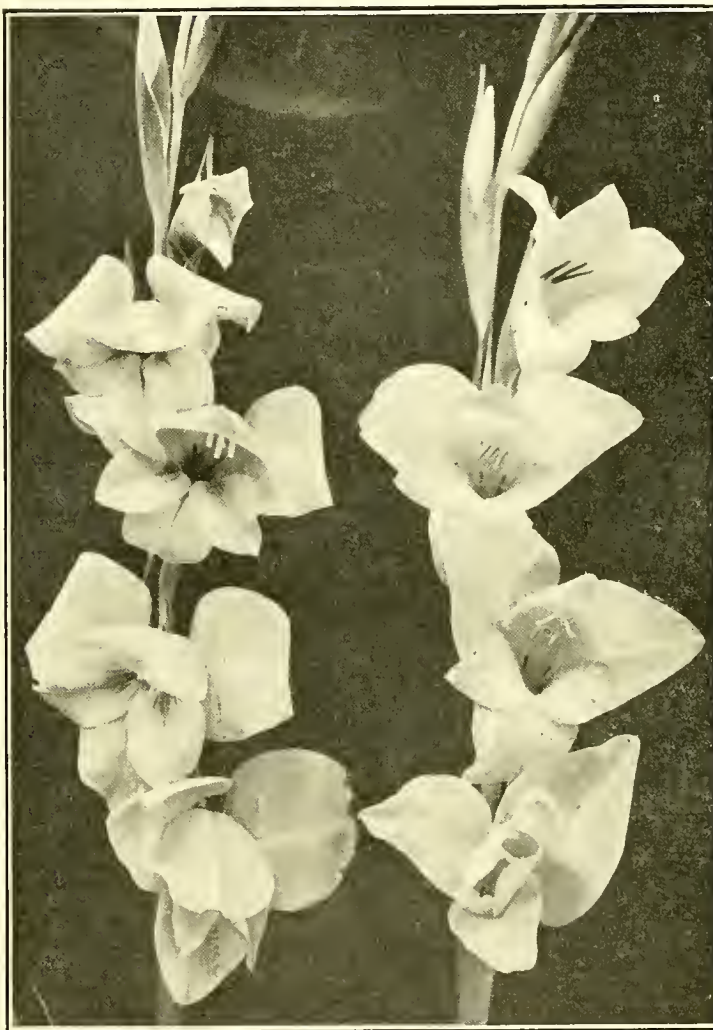


FIG. 45.—HYBRIDS OF *GLADIOLUS PRIMULINUS*.
HERMIONE. ATALANTA.

CULTURAL MEMORANDA.

FORCING OF FREESIAS.

If *Freesias* are required in flower at Christmas the first batch should be potted up as the forcing of the *Freesia* cannot be hurried. Perfectly cool treatment is required throughout the growing season. If the plants are home grown and have been stored in their flowering pots, they should now be turned out and the largest tubers selected for potting. For general purposes 5 inch pots are large enough to accommodate some six to ten tubers each according to the size of the latter. Place the plants in a cold frame where they may be kept shaded until they start into growth. When actively growing they should be given plenty of air according to the weather. Foreman.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castelford, Chepstow.

Hybrids of *Miltonia Roezlii*.—*M. Bleuana*, *M. Hyeana*, *M. St. Andre*, and other hybrids from *M. Roezlii* may be treated in the same way as *M. vexillaria*, but owing to the irregular manner in which they produce their flower spikes, it may be necessary to repot them at different seasons. *M. Roezlii* and its variety *alba*, and *M. Phalaenopsis*, will need a few degrees more warmth, otherwise they need similar treatment to the foregoing. The chief points in the cultivation of *Miltonias* is to maintain an equable temperature throughout the year, and keep the plants free from insect pests.

The Cool Houses.—As so many of the occupants of this division will soon need repotting, it is advisable to thoroughly clean the cool houses. The interior should be washed, and the moisture holding material beneath the top staging may be renewed. Coke broken up small makes good material for the stages, and may be easily replaced annually. When rearranging the plants select those that need fresh compost, and place them in a batch by themselves; the remainder may have their pots washed, and then be restaged in such a way as to give each growth ample room for development.

Care of Newly Potted Plants.—All the plants that have been repotted should be placed in a batch at the warmest end of the house, and kept shaded from bright sunshine until they are re-established. A humid atmosphere should be maintained, and due attention be paid to ventilation. Some years ago it was thought a low temperature did no harm to *Odontoglossum* and allied genera, but growers are now agreed that the best results are obtained where the minimum temperature is about 50 deg., with a rise of 10 deg. or so during the day. Throughout the summer months these figures may be exceeded and no harm will accrue, provided the atmospheric conditions, shading, and ventilation are correct. However, so far as possible, great fluctuations of temperature should be avoided. If thrips infest the plants, the house should be fumigated two nights in succession, and, if the attack is a bad one, it may be necessary to dip the plants in an insecticide afterwards.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Peaches.—The management of Peaches and Nectarines is now so well understood that the operations of root-pruning and root-lifting are simple matters. The present is a suitable time in which to commence such work in the early houses. Where exhausted trees have to be replaced, this operation may stand over for the present, especially if new trees have to be moved from the open walls, or obtained from a nursery. Few growers trust to such trees to replace failures in the early house, but prepare trees in successional houses by lifting them the previous year. The gap made in the successional house may then be made good from outside sources and there will be every prospect of success in both houses. The annual root-lifting of these reserve trees is quickly performed, and of the small quantity of new soil required may generally be found without delay. Fairly stiff loam from an old pasture contains nearly all that is essential for the production of the most healthy wood and the finest fruits. If too heavy, it may be improved by the addition of wood ash and old lime rubble. Lime in some form is absolutely necessary. If the soil is too light, burnt clay will give it body and it may be further improved by the addition

of bone meal or a little thoroughly decomposed manure. The latter, however, should only be used in extreme cases, as it is better to have the compost too poor than too rich, and to assist the trees by timely mulching and feeding when the fruits are swelling. It is most important to make the compost firm by steady ramming, and when the roots are relaid the compost can be copiously watered to thoroughly settle it amongst and around the roots. If good drainage is provided the space left for the compost may range from 24 to 30 in. in depth, according to the heavy or light nature of the soil. Beyond this depth no one need go, as it is better to keep the roots as near the surface as possible by mulching, than allow them to descend until they are out of control. If the trees only need root-pruning or root-lifting it may not be necessary to wholly lift them, but if the roots have made their way through the drainage they must be brought nearer the surface. Keep the trees well syringed, and if necessary shade them for a few days until new roots are formed.

Succession Houses.—In later houses from which fruits are cleared in July and August the trees will have ample time for ripening their wood. Afford plenty of air by night and day, but keep the roots thoroughly moist and syringe the foliage on fine evenings. Continue to remove all superfluous wood, and rearrange the sheets so that they may receive all the light and air possible. Gather fruits on later trees early in the day, when they are dry and cool, and if needed for home use gather them 24 hours before they are needed. Crops in late houses will be exceptionally useful this season, owing to the scarcity of other choice fruits. I have often advised the necessity of keeping the wood thinly placed on these trees; no shoots should be retained beyond what are necessary for furnishing the trees for next season's crop, nor should the soil in the borders be too rich, otherwise it is a difficult matter to ensure the maturation of the wood.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Note-taking.—While fruit trees are in full growth it is advisable to make notes concerning their condition. Hardy fruit trees have made more growth than usual this season. No doubt this is due to the heavy rainfall during July, and, in some cases, to the crop being a light one. Trees that are growing too vigorously should be root-pruned or partially lifted at a later date. Trees that are weakly should receive suitable attention in the early autumn, when a good portion of the top soil should be removed and replaced with good fibrous loam to which some artificial fertiliser and bone meal and wood ash may be added, to encourage vigorous growth.

Black Currants.—The pruning of Black Currants should be attended to at once. As they fruit on the preceding year's growth, the object in pruning is to remove old wood that has fruited and retain as much of the young wood as possible without overcrowding. This applies chiefly to the older specimens that have been established for some years. Recently planted trees will not require much pruning beyond thinning out a few weak growths to prevent overcrowding. Old, worn out trees are not desirable, and should be grubbed up. Far better fruit may be obtained from young trees than from those that are allowed to remain in one position for a long number of years.

Figs on Walls.—Where Fig trees are cropping freely, the roots should be kept in a moist condition. Although much rain fell during the month of July and early August, it is surprising how soon borders against the foot of a wall become dry. Where trees are not over-luxuriant in growth, they benefit from a light application of a concentrated fertiliser. Attend to the training and thinning of the young growths, leaving only those required for next season's crop. As wasps are particularly fond of Figs, it is advisable to protect the fruits by enclosing them in bags of wasp proof netting.

THE KITCHEN GARDEN.

By H. WHIZZLER, Gardener to Mrs. JENNER, Wenvoo
Castle, near Cardiff.

Late Peas.—To maintain a supply of Peas into the late autumn is not always an easy matter, but no effort should be spared that tends to make this object successful. A dressing of some quick-acting artificial manure is very beneficial, after which the ground on each side of the rows should be lightly stirred. In districts where mildew occurs the plants should be sprayed with Bordeaux Mixture.

Corn Salad.—Seeds sown now on deeply dug ground will provide plants of this useful salad for use during the autumn. Sow the seeds thinly in shallow drills drawn fifteen inches apart, and subsequently thin the plants to six inches apart.

Radishes.—Sowings of Radish seeds should be made out of doors at frequent intervals. Crisp roots are easily obtained at this season of the year, provided they are grown on fairly good ground.

Rhubarb.—The roots of Rhubarb should not be weakened by pulling many leaf-stalks at this time of the year. Roots intended for forcing should be encouraged to make all the growth possible, to enable them to build up strong crowns.

Onions.—The shrivelling of the foliage of spring-sown Onions and the bending over of the tops are signs which indicate that the bulbs are ready for lifting. The crop should be pulled during dry weather, and the foliage removed in such a manner that the neck of the Onion is left intact; then, when the bulbs are dry, they can be strung in ropes. To ensure their keeping satisfactorily, the bulbs should be ripened thoroughly before being stored. Place them thinly in a dry place in a sunny position, with their bases towards the sun. The varieties should be kept separate. Temporary lights should be placed over them to ward off the rain and dew, and any bulbs with thick necks should be picked out for immediate use.

Potatoes.—Owing to the prevalence of blight this season, it is not advisable to leave Potatoes in the ground longer than necessary. Varieties should be dug as they approach maturity, and after a few hours' exposure to allow them to dry, the tubers should be taken to the store-room. If disease has shown in the tops, the Potatoes should be sprinkled with slaked lime.

PLANTS UNDER GLASS.

By JOHN COITTS, Foreman, Royal Botanic Gardens,
Kew.

Cyclamen.—Seeds of Cyclamen should be sown during August, to provide plants for flowering next year. Sow them in well-drained pots or pans, filled with sandy soil, and stand the pans in an intermediate house where the young plants should remain throughout the winter, placed well up towards the roof glass. At their best, Cyclamen seeds germinate irregularly, and if they are old they may take several months to germinate, thus causing a serious loss of time. On this account it is wise, when purchasing, to stipulate that fresh seeds be supplied.

Mignonette.—Plants that are being grown for autumn flowering should be trained to neat stakes and when the pots are well filled with roots the latter should be assisted twice a week with weak applications of liquid manure. When good guano can be obtained it is one of the best of manures for plants in pots. Another sowing of seeds should be made in August to provide plants for flowering next spring. Prepare the pots and compost as advised in a former calendar; stand them in a cold frame and keep them covered until the seeds germinate. The seedlings may remain in a shallow, cold frame or pit throughout the winter and be allowed plenty of air on all favourable occasions.

Humea elegans.—Another sowing of seeds should be made during the present month, and

plants from the June sowing which have been pricked off in pans or boxes, should be potted into small 60 sized pots. *Humea elegans* generally gives a good deal of trouble to cultivators, but if grown in cool conditions and due care is exercised in watering, it is not so difficult to manage. The older plants are the most difficult to manage, as special care is required in watering them, but the real trouble commences the following year when they are transferred to their flowering pots. At this stage it is not unusual for a whole batch to be killed by an unskilled cultivator, who does not understand the plants. Well-grown specimens are so elegant and beautiful that it is worth some extra trouble to produce them. It is advisable to remember that certain people suffer from a rash whenever they come into contact with *Humea elegans*. This, I believe, is not generally known, and it is possible that people may have suffered without knowing the cause.

Fuchsia.—Where Fuchsias are in demand and good plants are required for next year, no time should now be lost in propagating the stock required. This is best done by lightly trimming over a few plants and placing them in a heated house, where, if syringed frequently, they soon produce fresh growth which provides plenty of good cuttings.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Bulbous Plants.—Preparation should be made at an early date for the planting of *Lilium candidum*, *Fritillarias*, and *Colchicum autumnale*. English-grown bulbs of the Madonna Lily are not easily obtainable through the usual channels, but a tour among cottage gardens in some districts results in the acquisition of a fair quantity of healthy bulbs. Consideration should be given to the proper placing of this Lily, so that it may remain undisturbed in an open, sunny position. A well-worked moist soil of medium texture is favourable to the growth and multiplication of the plants. It is advisable to lift *Fritillarias* every fourth year and replant them in fresh soil to retain their vigour. Remove the offsets and plant these in the reserve garden. *F. Meleagris* and *F. latifolia* are most suitable for planting in grassy places, whilst *F. Moggridgei* and *F. recurva* are well worthy of inclusion amongst choice bulbs for the rock garden. The latter species requires slight protection during winter and should be planted in a sunny corner. The odour of *F. imperialis* (Crown Imperial) detracts from the popularity of this stately species, but grouped on the fringe of the shrubbery it provides fine breaks of colour. Fortunately, varieties of *Colchicum autumnale* are not particular as to soil. It is preferable to plant the bulbs amongst very dwarf plants or in grassy places to prevent heavy rains bespattering the blooms with dirt. Planting may take place now, and be continued at intervals for some few weeks to ensure a succession of these delightful flowers from September to November.

English Irises.—The bulbs of English Irises are at rest and may be lifted and separated. Replant the bulbs any time before the middle of November, using plenty of sand around them. A light friable loam is favourable to the growth of English Irises, and the beds should be raised above the general ground level.

Nemophila.—Varieties of *Nemophila insignis* are very effective in spring when used as edgings and for furnishing small beds. They may also be planted broadly in different shades of colour. Seeds should be sown in August in sandy soil, where the plants are to flower. Attend to the thinning of the seedlings and keep the plants free from fallen leaves.

Hollyhocks.—The stately flower spikes of Hollyhocks are valuable for bold effects and for breaking up straight lines. Seeds may be sown in boxes placed in genial warmth. Pot up the seedlings as soon as they have made the third leaf, using a light compost, and grow them in frames during the winter. Deep rich soil of medium texture is suitable for the production of fine flower spikes. Palling Belle is a desirable pink variety.

VEGETABLES.

PEA, QUITE CONTENT.

The maincrop culinary Pea named Quite Content has proved a valuable variety here, after tests carried out during three seasons. The illustration (Fig. 46) shows plants of this variety growing at Aldenham Vicarage. The row was 75 feet in length, and the haulm 7 feet high, covered with grand pods. The seeds were sown on March 12, in ordinary potting compost, three to four seeds in a 3½-inch pot, and covered with rather less than an inch of soil. They were placed in a cold frame, and the seedlings were hardened off before being transplanted in their permanent quarters on April 7. The ground had been well trenched and enriched with manure the previous year, and subsequently trenched, but

been exposed to the air for some time, and liquid manure once a week, there is no lack of pods of the best quality. *James A. Paice, Aldenham Vicarage Gardens.*

THE ROCAMBOLE.

The Rocambole (*Allium Scoredoprasum*), called by the French Ail Rocambole, to distinguish it from the Oignon Rocambole, which we call the Egyptian or Tree Onion, is a useful standby when there is a shortage of the ordinary Onions. In war time the clumps were left for several years unmoved, when mostly only tiny bulbs were obtained, and the question arose whether planting in autumn or after the beginning of the year would give the better crop. Two contiguous plots, each one yard, were planted, one about August or September, and the other on February 5, the plants being set about 6 inches apart each way. All the earlier planted ones "bolted," some sending up two

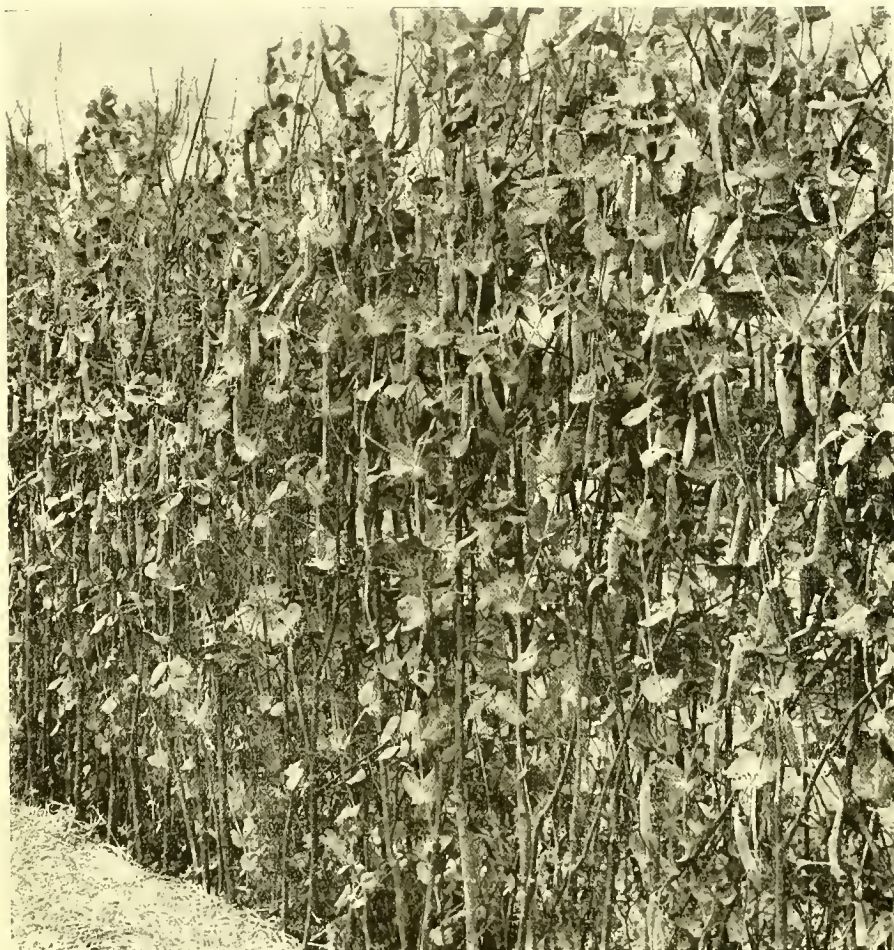


FIG. 46.—PEA QUITE CONTENT IN THE GARDENS AT ALDENHAM VICARAGE, ELSTREE.

soot only was added the second time. The plants were placed 15 inches apart in the row, and a few inches of soil were drawn up to them. Stakes were placed in position before the shoots had fallen on one side, small branches being used first, and stakes 7 feet in height at a later date. To ensure free, uninterrupted growth, the surface soil was regularly stirred with a hoe until, later in the season, and a deep mulching of manure was placed on both sides of the row.

Mulching not only assists the crop treated, but enriches the ground for future crops. Any kind of manure may be employed; we use cow manure on our light soil, and this keeps the roots cool and moist. Spent Mushroom bed manure is also good and neater in appearance, than strawy litter. I find that by mulching both sides of the row of Peas, giving a thorough soaking with soft water, or water which has

flowering shoots; the blossom buds were removed as they appeared; only one or two of the later planted specimens attempted to flower. On August 2 the crop was raised and weighed, after brushing, at once, with the following result:—Early planted, bulbs 8 lb. 11 oz., tops 4 lb. 10 oz.; 27 plants. Late planted, bulbs 3 lb. 2 oz.

Though there were many more tiny bulbs amongst the early planted sets, the general size was larger and more satisfactory than in the case of the late planting. It would seem to be advisable to plant early and not to store the bulbs over the winter.

Leeks which had remained *in situ* for five or six years had nearly expended their energy on blossom. The patch only extended over a circle of about six inches diameter, and yielded 1 lb. 2 oz. of bulbs and 6 lb. 2 oz. of tops, with blossom heads just bursting into flower. *H. E. Durham.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

CLIMBING ROSES IN AUGUST.

DOROTHY PERKINS and her family, Babette, Minnehaha, and the rest of them, undoubtedly reign as queens of the Rose garden in August.

Th. crimson, Blush and Tea Ramblers have ceased to flower long since. Excelsa, Alberic Barbier, and the other early Wichurainas have faded, and even Hiawatha is fast browning off in mid-August, but Dorothy Perkins, on fence and pergola, still looks bright and attractive, and it is doubtless on this character of persistence that the popularity of its family rests.

Many of us find in August a short period of comparative leisure, when we may spend rather more time in our gardens than we are able to do in the earlier months of the year, and we appreciate accordingly the climbing Roses, which then remain bright and pleasing. It is when we have heavy rains throughout July, such as we have experienced this year, that we appreciate the value of the double-flowered climbing varieties. In many years several of the late-flowering singles, such as Ethel, Chatillon Rambler, Evangeline, and Coquina are still serviceable, but this year they were so knocked about by the July rains that their flowering period was unusually short. Coquina and Chatillon Rambler are still full of flower in mid-August, but not so showy as they should be at this period, and when one passes a bush or arch of Evangeline in the evening there are still enough flowers left to give that delicious perfume which makes it unique among the climbers; but its glory has departed, and it is no longer worth pausing to look at. The double forms alone continue to make any considerable display.

Of Dorothy itself I need hardly write at all. Everyone knows it, and nearly everyone who has room will grow it. The attack recently made on it in one of the daily papers only illustrates its universal popularity. Lady Gay, which resembles Dorothy so nearly that its flowers are often indistinguishable therefrom, appears to me in some respects less satisfactory. Lady Gay, in my garden, seems to go off earlier than Dorothy Perkins, and is practically flowerless in autumn, when the adventitious flowers of Dorothy Perkins are sometimes numerous enough to make quite a good secondary display.

Minnehaha (Walsh, 1905) is a fine grower, and has a larger and more open bunch of flowers than Dorothy Perkins, and, especially when grown over an arch or pergola, the pendant flowers, as one looks up, produce a rather more diaphanous effect, which is sometimes very pleasing. The flowers are often described as deeper in colour than those of Dorothy Perkins, but I have often compared individual flowers without being able to discern any difference.

Babette (Walsh, 1908) is certainly deeper in tint of flower than Dorothy Perkins, and a trifle earlier, but both this and Minnehaha are over before the ubiquitous Dorothy is finished. There are some forms of Dorothy Perkins of a very beautiful flesh or shell-pink colour. The first was Lady Godiva, sent out by Messrs. Paul and Son in 1908, while in the following year Messrs. A. Dickson and Sons introduced Dorothy Dennison, and Messrs.

Cocker and Sons a variety named Christian Curle.

These three Roses are considered to have flowers so nearly alike that the National Rose Society's regulations for exhibition do not allow them to be shown as distinct varieties in the same stand. They are all described in the National Rose Society's catalogue as sports of Dorothy Perkins; Mr. Dennison, however, informs me that Dorothy Dennison was not a sport, but a seedling from that variety, and I will give some reasons that induce me to consider that this view is probably correct.

I have not grown Christian Curle, but both Lady Godiva and Dorothy Dennison have been growing in my garden for some years; both are doing well, and I have from time to time carefully compared the two. The pretty little flowers of the bunch are not typically distinguishable. If one finds a trace of difference in tint it is accounted for by difference in the age of the flower, or that it is exceptional, and not typical of the rest. There is not much difference in time of flowering. Dorothy Dennison opens a few days later, but the position of Lady Godiva in my garden is more open, and this may affect the matter. Lady Godiva, however, seems apt to sport occasionally either back towards its parent, or so as to show somewhat paler flowers. I have not noticed this variation in the past two years, but about four years ago it sported in this way in rather a marked manner. It does not, however, sport back to anything like the extent that White Dorothy does. In Dorothy Dennison, on the contrary, I have noticed no variation in colour. In the form of the bunch Dorothy Denison seems somewhat closer and rounder, and the flowers are more tightly packed than is the case with Lady Godiva.

I do not know that I could distinguish the varieties by this character, but it is sufficiently marked to be noticeable when comparing bunches of each. So far as it goes, this is a point in favour of Lady Godiva.

Again, in my garden Lady Godiva almost always has a greater or less amount of mildew on the outside of the buds and flower stems, which is also characteristic of Dorothy Perkins, while, so far, the buds and flower stems of Dorothy Denison have been free from this disfigurement. This is a point in favour of the latter Rose. The foliage and armature is rather alike in the two forms, but that of Dorothy Dennison seems inclined to be rather smaller, while the leaflets are more rounded, whereas in Lady Godiva the leaflets are, comparatively, somewhat more elongated. It is, however, possible that difference of soil and situation may account for some difference in this respect.

In the result there seem to be differences between the two forms, but these are undoubtedly slight. Should Dorothy Dennison prove to be free from bud and stem mildew elsewhere than here, this may make it the more desirable.

White Dorothy (B. R. Cant and Sons, and Paul and Son, 1908), is a white sport from Dorothy Perkins, and was hailed with great enthusiasm when it first appeared. This has proved to some extent to have been justified, for we have nothing to take its place at this season of the year. It is true we have better white sorts, Sander's White, one of the best, has much purer white flowers, and, I think, produces a prettier and more graceful truss, but it is earlier than White Dorothy, and has now quite gone over, whereas White Dorothy is still well in flower. White Dorothy grows as

vigorously as its parent, and, like it, has good foliage: the flowers have, however, two rather serious faults. The first is that they are not pure white, as the anthers showing in the centre tend to give this part of the flower a dirty appearance; while the second fault is its great tendency to revert. I may have been unlucky, but I have seldom found a bunch quite free from all trace of pink, particularly as the flowers age. Sometimes they come nearly as pink as those of Lady Godiva, and sometimes I have found a bunch of parti-coloured flowers in which one side is white and the other pink. Here, again, the plant seems to behave worse in this respect in some years than in others.

The July rains which destroyed the single climbers have caused excellent growth in the plants, and seems to have brought into flower again that excellent semi-climber, Gerbe Rose. The flowers of this variety are larger than in most of the Wichurainas, and are borne more or less singly instead of in bunches. They are not only a very pleasing shade of pink, but have a certain perfume of their own.

Another climber that is looking well now is the Noisette variety, Alister Stella Gray. This is perhaps best as a big bush or trained on a fence, but it will accommodate itself to the pillar or pergola, the only difficulty in this case being to keep the base clothed. This year I have been struck with the great persistency of flowering of Paul's Scarlet Climber. A standard of it is still carrying many flowers though it began flowering in June. No doubt when carefully examined the blooms are not so good as they were, but we shall hope for flowers again in autumn.

I fear the choice of August flowering climbing Roses is a somewhat limited one. No doubt raisers of new Roses desire to exhibit them at the July shows, but I cannot help thinking that an extension of good and later flowering climbing sorts would be welcomed. *White Rose.*

RAMBLER ROSES.

EXPERIENCE, together with observation of other people's practice, leads me to state that poor cultivation is chiefly responsible for the many unsatisfactory specimens of Roses seen in gardens. A writer in *The Times* recently described the flowers of Dorothy Perkins, as "a sharp, acrid, yellow-pink." His criticism of the variety failed because his description of the colour of the flowers of this variety was entirely wrong—always assuming the plants to be well grown. The writer had evidently seen poorly-grown specimens of this Rose, which, under such circumstances, often do display blossoms of the colour described.

In fairness to all varieties of Roses, especially ramblers, it should be stated that if the plants do not receive reasonable cultural attention they cannot be expected to develop their true colour and freedom of flower or growth. Many varieties are condemned unjustly. Those who plant rambler Roses for the first time are generally anxious to have flowers as early as possible. To gratify this desire they do not cut back the plants so severely as they should, but allow a certain length of last season's growth to remain to give the necessary blossom. Experienced growers know how foolish such treatment is; they prune the plants to within 6 inches or 10 inches of the base and do without flowers the first year. The result is vigorous growths, 10 ft. long, with ample foliage and correctly-coloured flowers the following season, and well-furnished plants afterwards. Established plants cannot continue to grow and flower well for an unlimited period without manual aid of some kind. To remove the growths which have borne flowers is absolutely necessary to ensure success. *E. Molyneux.*

NOTICES OF BOOKS.

Eucalyptus.

THE fortieth part of Maiden's critical revision of the genus *Eucalyptus* has appeared.* This completes the fourth volume of this great quarto publication. So far, the work comprises descriptions of 222 species, illustrated by 167 plates. How near this is the end we are uninformed. The species figured in the present part are: *Eucalyptus terminalis*, *E. dichromophloia*, *E. pyrophora*, *E. laevopinea*, *E. ligustrina*, *E. stricta* and *E. grandis*. *E. terminalis* is the type of a number of species characterised by having elegant, urn-shaped seed-vessels. Like the equally widely-spread *E. corymbosa* it forms a conspicuous tree in the landscape. A remarkable fact in the distribution of the genus *Eucalyptus* is its entire absence from the native vegetation of New Zealand. Dr. Cockayne gives an example of the aggressive character of a species of *Eucalyptus*. "At Waitati, near Dunedin, on the land belonging to the Mental Hospital, stands a fine example of a kind of stringy-bark (*Eucalyptus numerosa*), more than 58 years of age. Originally the vegetation of the area was mixed Taxad forest, but this has been replaced by a close growth of Manuka thicket (consisting of various low shrubs). Some years ago, this thicket was burned in the neighbourhood of the tree, and a young forest of gums several acres in extent has sprung up, the new ground and the potash from the fire being eminently suitable for the germination of the gum tree seeds. In 1910 the gum saplings grew extremely closely. Their height was from 40 to 50 feet. Some were half a foot in diameter, while others were extremely slender. Thousands of Manuka seedlings sprang up along with those of the gum; and it must not be forgotten that Manuka, far more than most of the indigenous plants, can reproduce itself again and again after burning, and can exclude almost all other vegetation. But in this case the great rapidity of growth gave the gums the victory, and eight years ago, only a little Manuka remained near the margin of this remarkable and quite natural forest growth."

The Flora of Jamaica.†

THIS fourth volume of Fawcett and Rendle's *Flora of Jamaica* has suffered delay in publication owing to conditions prevailing during the last five years. The fact that printing was begun in 1917 will explain the absence of reference, especially in the earlier sheets, to papers which may have appeared subsequently. Thus far the authors. The families described are: Leguminosae, Geraniaceae, Oxalidaceae, Linaceae, Erythroxylaceae, Zygophyllaceae, Rutaceae, Simarubaceae, Burseraceae, Meliaceae, Malpighiaceae, Polygalaceae, and Euphorbiaceae. The Leguminosae represent forty-nine genera, exclusive of introduced plants, which are included in square brackets. Apparently there is no genus of this family confined to Jamaica. Two very familiar subjects are recorded, namely, the common Furze and the white Clover; the former is accepted as an introduced plant, whilst the latter is considered to be a native, and there may be sufficient grounds to justify that assumption; but when we remember that this lowly plant has spread throughout New Zealand almost within the memory of living man, and is included among the introduced plants by the most competent authorities, we think there is cause for doubt. However, it was considered by the late Asa Gray to be indigenous in North America. The synopsis of the Euphorbiaceae will be another welcome addition to the Flora. They are included under thirty genera, one of which—*Dendroconusinsia*—is new, and comprises three species, all confined to Jamaica. The excellent figures of a selection of plants will be of great service to the amateur.—*W. Botting Hemslay.*

* *A Critical Revision of the Genus Eucalyptus*, by J. H. Maiden, published by the Government of the State of New South Wales.

† *The Flora of Jamaica*. Containing descriptions of flowering plants known from the island, by William Fawcett, B.Sc., and Alfred Barton Rendle, F.R.S., etc.; Vol. IV., Dicotyledonous families Leguminosae to Callitrichaceae, printed by order of the Trustees of the British Museum, London, 1920, 8 vo., pp. 369, with 114 text illustrations.

TREES AND SHRUBS.

CLEMATIS SIEBOLDII

THIS beautiful Clematis, according to Loudon, was introduced from Japan by Dr. Siebold, in 1836. It has been cultivated under several names. Loudon called it *C. florida* var. fl. pl. violacea, and another name for it is *C. bicolor*. There is no doubt that it is a variety of *C. florida*—that beautiful Chinese species which is one of the parents of our modern large-flowered Clematises—and it probably originated under cultivation in Japanese gardens. Its flowers are about 3 in. in diameter, solitary on slender stalks 3 in. to 4 in. long. The six sepals are creamy white, the centre of

GUEVINA AVELLANA.

It is only in the warmer parts of our islands that this Chilean evergreen (see Fig. 48) can be grown satisfactorily. To see it at its best one must visit the Cornish gardens. In May last, in the garden at Trewidden, near Penzance, I saw a tree which is probably equal to any other to be found in this country. It is 35 feet high, of pyramidal form, and its base is about 13 feet in diameter. Being in perfect health, its rich green, lustrous foliage makes an exceedingly handsome picture. From the point of view of leafage alone, it would be difficult to find anything more ornamental among evergreens. The leaves are pinnate or bi-pinnate, about one foot in length, and often composed of eleven



FIG. 47.—*CLEMATIS SIEBOLDII*; FLOWERS CREAMY-WHITE WITH VIOLET-PURPLE STAMENS.

each flower being filled with a dense cluster of stamens transformed into small petaloid organs; as this cluster is half the diameter of the whole flower, and is of a violet-purple colour, it makes a very effective contrast with the sepals. Messrs. Osborn, of Fulham, famous nurserymen of their time, but now long disappeared, were great cultivators of *Clematis Sieboldii*, and it was in their nursery that the fine figure of the plant was made, which appeared in Sweet's *British Flower Garden*, t. 396. Among present-day cultivators, one of the most successful is Miss Willmott in her garden at Warley. The late Canon Ellacombe, too, used to grow it at Bilton, but on the whole it is not grown so much nowadays as it deserves to be.—B.

leaflets—sometimes, however, only three, sometimes as many as fifteen. These vary much in size, according to the vigour and age of the tree; on old trees that have arrived at the fruiting stage they are often no more than one inch wide, but on the trees at Trewidden they have been as much as 7½ inches long by 3 inches wide. They vary in outline from triangular to ovate, and are sharply and boldly toothed. The leaf-stalks are clothed with rich brown down. The flowers are very white, and are borne on racemes 4 to 6 inches long, in August. The fruits are about the size of small acorns, and enclose seeds said to be eaten in Chile. The tree has borne fruit at Trewidden.

Guevina Avellana was introduced in 1826 and is the only representative of the genus. B.

OF SLUGS.

(Concluded from p. 86.)

THE CATCHMENT OF THE TRAP.

For the effective action of any baited trap it must be assumed that the bait is more attractive than any neighbouring plant or food; whilst many slugs may be attracted away from tasty young Radish roots, seedling Cabbages or Lettuces, it is preferable to trap the ground before planting or sowing. The surest way to avoid disappointment is to trap the ground thoroughly whilst vacant, when the absence of any counter attractions lures the slugs more surely to their death. Although slugs may be caught any time during the year, excepting during frost, it is well to keep the traps well attended during the autumn, winter (for would-be parents) and early spring (for the young off-spring); during the frosty season it may be well to use the "dry method" where the pots used are liable to fracture from the freezing of the contained water.

There is scope for finding an improved flavouring agent for the bait, though plain bran will decoy many from more natural food, and, as has been noted, a fillip of Orange flavour is still more effective. Whilst shaded and moist regions in the garden usually harbour more slugs than other parts it is well to remember that shady and damp conditions may be found elsewhere than under an east or north wall. It is particularly along the borders of a bed or plot that the best "bags" are to be made. The molluscs especially affect a tile or brick edging, for it is about such sites that they find good places for egg-laying, so that eventually the young hatch and lurk about their birthplace. This predilection is comfortable to the trapper, for in the chilly and damp season the traps can be laid and re-baited from the pathway, though if susceptible crops are grown traps had best be kept in commission near them. Here I may particularly mention wintering Onion seedlings, for the small, black, yellow-bellied slugs are fond of the tender roots, and I have seen considerable damage done. Strawberry beds should not be neglected.

It may also be noted that by using deterrents (such as the classic soot) about treasures that require protection, slugs are driven to the traps. One curious thing seems to be clear, and that is that a patch of garden ground will support a certain number of slugs without the pests doing appreciable damage, so that when one has dealt with the excess population one's energies in trapping get somewhat worn away. On one occasion a whole collection of Brassica seedlings on untrapped ground had begun to show desolation, and it was not possible to put traps between the rows, so a series was put in along the border: next day the captures were few, so injections of carbon disulphide were made between the rows; the following day the traps were filled with slugs and the crop progressed.

The mode in which these traps work is not very clear. First of all it is necessary for the bait to be near the ground surface or not much below it. If bran is used, even when Orange flavoured, and placed together with medicated sawdust at the bottom of a pot, which is set in the usual way, slugs are not caught, whereas if the bran is near the surface, as in the cups described, the lure is effective. There would appear to be three ways in which the slugs can reach the lethal bath: (1) by crawling along the wire, (2) by stretching across from the edge of the pot towards the bran, when they may fall by overstretching or by failing to get a hold because of the loose bran, or (3) by trying to crawl down the side of the pot in an endeavour to reach the bran, which, from the intervening toxic immersion, does not succeed. Whilst many of the larger sized slugs are taken by the second method—as may often be seen by the disturbance of the bait—I think the majority reach their death in the third way. In trial traps in which the bait is entirely isolated and unreachable, large numbers of tiny slugs may be caught: the only way that this could happen is by attempting to crawl down and up again, for they are unable to jump and it is unlikely that they would drop from the cover, at any rate

I have no evidence that they do so. But it reckes little which method of advance is selected by the slug: the main thing is that he "gets there."

Many things are done in gardens which I fancy are really endeavours to combat the slug pest. For instance, the very thick sowings of Carrots, Beans, and other crops which one often sees; a thin sowing may fail, but sometimes a thick one may succeed sufficiently.

The sprouting of Potatoes is, or may be, an anti-slug procedure; the hardish, stout, greened sprout resists, whilst the etiolated tender shoot succumbs. I have had a whole bed of early-planted unsprouted Potatoes entirely destroyed by slugs except for one or two straggling victors in the encounter. Columella, I think, says that Lettuce must not be planted out till it has six leaves, and this is hardly safe on infested land, though on well trapped ground not a single plant need be lost even if the third leaf has only just appeared before the planting.

If one could exterminate every slug and prevent ingress of others, gardening really might partake of the nature of a pleasure! Gardeners are not ready to take on a job which is pool-poohish in their eyes, but at any rate I have convinced one of the utility of making some reduction, even if temporarily, in the number of slugs.

Readers of this article will get an idea of the proportions and arrangement of the "any pot" slug trap, by referring to Fig. 39, and remembering that in what one may call the "normal" size of trap, the cup is $\frac{1}{4}$ in. diameter, and the pot $2\frac{1}{4}$ in., and the horizontal part of the wire holds the cup about $\frac{3}{8}$ inch from the edge of the pot. Another point that should be noted is that the pot is represented as buried to its rim; the rim should be distinctly above the ground-level (say, $\frac{1}{4}$ or $\frac{1}{2}$ an inch), otherwise a heavy rain will make a mess of things. H. E. Durham.

ORCHID NOTES AND GLEANINGS.

CATTLEYA JUDAH USK PRIORY VARIETY.

R. WINDSOR RICKARDS, Esq., Usk Priory, Monmouthshire, sends a fine inflorescence of this showy cross between C. Lord Rothschild (Dowiana \times Gaskelliana) and C. Hardyana (Dowiana \times Warszewiczii). The flowers are of the best C. Hardyana class, but C. Gaskelliana has given better form and greater expansion, as it frequently does when it enters into the composition of a hybrid. The sepals and petals extend to eight inches, the petals being nearly three inches wide; both sepals and petals are rosy-mauve on a silvery white ground. The broad lip is ruby-purple, with well-defined branched lines extending from base to centre. It is very fragrant, and altogether a charming flower. The plant was purchased by Mr. Rickards from a midland collection as C. Judith, under which name it was shown in error at Manchester on September 19, 1918, the parentage of C. Judah being given with the plant. Since that time another error has been added by giving C. Empress Frederick \times Hardyana as the record of C. Judith. C. Judah was recorded in the *Gard. Chron.* for Sir Geo. Holford in 1915.

Laelio CATTLEYA SOULANGE.

A GRAND inflorescence of four flowers, forming quite a bouquet, is sent by R. Windsor Rickards, Esq., Usk Priory. The original hybrid was raised by Messrs. Flory and Black, between L.-C. Lustre and C. Dowiana aurea, and first flowered in 1915. It has in its composition C. Luddemanniana, C. Dowiana, C. Warszewiczii and Laelia purpurata, which combine to make a good flower with light rose-pink sepals and petals; the bright purple lip has golden lines, and the front of the lip is crimped and folded in the manner shown in L.-C. Lustre. Mr. Rickards writes: "My plants have made fine growths, but I am sorry to find them flowering much too early in spite of the sunless summer. I usually get my display in November."

HARDY FLOWER BORDER.

ERIGERON STRIGOSUS.

ALTHOUGH introduced in 1816, this plant is seldom seen in gardens and less frequently heard of. No nurseryman seems to offer it, and yet it lingers on in provincial gardens, where it seems to be appreciated at its worth for cut-flower purposes. It grows 2 ft. to $2\frac{1}{2}$ ft. high, branching at the top in the form of a loose corymb, and is particularly graceful with its small, white, Daisy-like flowers and yellow disc. It can therefore be cut with stems of any desired length for vases, and used alone or mixed with other flowers or grasses. Every prominence is given in catalogues to species and varieties of Erigeron with large flowers. In some instances E. Edina is extolled as an improvement upon the dwarf, small, white-flowered E. Coulteri, but this can only be on account of its greater size. I am more frequently called upon to name E. philadelphicus, perhaps, than any other species, and certainly the small, rosy purple flowers have their charm, though lacking the graceful poise of those of E. strigosus. Then, again, the small Daisy-like E. mucronatus is very widely distributed in gardens on account of its quite unobtrusive beauty on the rockery; but it does not lend itself so readily for cut-flower purposes as E. strigosus. J. F.

GALEGA HARTLANDII.

MANY people regard the above as the best of the Galegas for garden decoration, on account of the size and durability of the flowers. I have had it under observation for the past twelve years or more, under different conditions, in partial shade and in full sun. In the front garden, while shaded from the south by a hedge, and from the west by trees a little way outside the garden, it still gave very satisfactory results. It grew more strongly where exposed to the south, but shaded on the west. The plants continued in bloom for eight to ten weeks, and cut spikes were also wonderfully durable. Under these conditions the variegation of the early leaves was never a conspicuous feature. It never set many seed pods, and, although I gathered them in different years, I was too much hampered for space to sow them on trial. I was interested in the experiences of Mr. Arnott (p. 88) with self-sown seedlings, and hope the white-flowered one is as durable as the type. In my experience of G. Hartlandii, the flowers are nearly, but not quite, sterile, and that I consider the reason for the marked durability of the individual flower and the raceme as a whole. There is a white variety, possibly also coloured forms, of G. officinale that is self-fertilising, and all the flowers drop after a few days, and the plant gets laden with seed pods. A white Galega named G. Niehe is said to be a great advance on G. officinalis alba. F.

ONOSMA ALBO-ROSEUM.

It is doubtful if any of the Onosmas appeal to the lover of flowers to a greater degree than O. albo-roseum. It produces flowers of exceptional beauty, and inspires all lovers of rock plants with a desire to venture upon its cultivation. It is not easy to describe in words, and even the finest colour drawings fail to give a full idea of its charms. It is a sub-shrubby plant, with stems which grow woody at the base, and, with the leaves, are quite hoary. Arching over from the branches are the exquisite bugles of white and rose, with a tinge of blue. It is not, however, such an accommodating plant as O. stellatum. It seems to have a bad habit of dying off when it attains some age, and it is always a good plan to have a young plant or two at hand to replace the old ones. I have not found it difficult to propagate by cuttings taken off and inserted in light soil surfaced with pure sand, and then well watered and placed under glass. It is somewhat slow to root, and the cutting pots should not be disturbed too soon. It likes a dry soil, and looks its best when growing in the chinks of rockwork, with earth behind, and is also highly suitable for growing on a retaining or double wall. Such a good plant as this Onosma is well deserving of care and maintenance. S. Arnott.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 99.)

SCOTLAND.

DUMFRIESSHIRE.—Apples on walls are an average crop of good quality, especially the varieties King of the Pippins, Court-Pendü Plat, Lord Hindlip, Blenheim Pippin, Prince Albert, James Grieve, Charles Ross, Fearn's Pippin, Stirling Castle, Christmas Pearmain, Peasgood's Nonesuch, New Hawthornden, Ecklinville Seedling, and Royal Jubilee. Espalier and bush Apples have practically no fruit. Small fruits and Strawberries were good. The soil is a fairly good loam, the subsoil clay. *John Urquhart, Hoddam Castle Gardens, Ecclefechan.*

—The crops of Raspberries, Red Currants, and White Currants were well above the average, and the crop of Gooseberries was an enormous one. Raspberries also were well above the average. Black Currants were not an average crop, but the fruits were very large and of good quality. Apples are very poor. Lady Sudeley and Lane's Prince Albert are the best cropped sorts. Strawberries were under the average in quantity, and the berries rather small. Laxton's Fillbasket was our best variety, but the berries were inclined to rot before they were ripe. *James McDonald, Dryfeholme Gardens, Lockerbie.*

ENGLAND, N.E.

NORTHUMBERLAND.—The fruit crops are poor with the exception of Raspberries, and Gooseberries were an average crop. Continued cold winds during the time of flowering, and late frosts, spoiled the expectation of a crop which, on the whole, looked promising. The soil here is a free loam on a gravel subsoil. This has been a noted locality for years for fruit. *James Winder, Houden Dene Gardens, Corbridge-on-Tyne.*

—For the third year in succession the outdoor fruit crops have been a failure owing to the caterpillar pest, both foliage and flowers being entirely eaten by them. Our gardens are extensive, and the fruit trees large, and not having sufficient labour to deal with the pest it has got the better of us. The gardens are entirely surrounded by woods, which is chiefly the cause of the mischief. The soil is first-rate and deep. *Edward Tindale, Ravensworth Castle Gardens, Gateshead.*

YORKSHIRE.—The fruit crops in this district are very scarce. Apples, Pears, and Plums suffered severely from violent winds and dull, cold weather when the trees were in blossom. Pears on walls are a fairly good crop. The only sorts of Apples carrying full crops are Lord Grosvenor, Bramley's Seedling, James Grieve, Rival, and Worcester Pearmain. Strawberries, Gooseberries, and Red Currants all gave heavy crops. The soil is a good loam on a layer of clay, with a sandy subsoil. *Jas. B. Hathaway, Baldersby Park Gardens, Thirsk.*

—Late varieties of Strawberries were very fine, but early kinds were badly damaged by excessive rains. Unlike Pears, Apples bloomed freely and the fruits set well, but were severely thinned by drought. Cox's Orange Pippin and Bramley's Seedling, grown on the Paradise stock, were the first to drop. All small fruits were both good and late, especially Black Currants. The soil is a medium loam, overlying chalk. *Sidney Legg, Warton Priory Gardens, York.*

CAMBRIDGESHIRE.—There was an exceptionally good show of blossom, but during the pollinating period heavy rains set in followed by very high east winds which entirely destroyed all prospects of a good fruit season. The Strawberry season was greatly affected by the rain which, in some parts, practically ruined the crop. *Arthur Sewell, Barton Road, Ely.*

ENGLAND, E

ESSEX.—The Apple crop is very disappointing. The trees flowered very freely and in many cases set a large quantity of fruit, but these were poor in quality and, almost without exception, failed to swell and have since fallen.

Pears on the whole are very good. Plums of the varieties Monarch and Jefferson gave good crops, other varieties are very light. Bush fruits have been very good. Strawberries are the worst crop I have ever known, due, I believe, to the excessively dry spring and particularly in May. Raspberries have been fairly plentiful but very poor in flavour. Morello cherries on the walls are good in quality and flavour. The soil is a strong clay but gives good results if well worked. *Arthur Bullock, Copped Hall Gardens, Epping.*

—Plums flowered remarkably well, but the crop that set has been sadly thinned by attacks of aphids. It is noticeable that the few Apple trees bearing crops are generally those that bore little or no fruit last year. *C. Wakely, County Gardens, Chelmsford.*

—Apple and Pear trees, after the heavy crops of last year, had a splendid lot of bloom, but the late frosts destroyed all the fruit on

LINCOLNSHIRE.—In spring there was every prospect of a good fruit year; the trees generally, with the exception of Pears, were a mass of bloom, but continued rains and frosty nights during the time the bloom was expanded spoilt the prospect and blight badly affected the trees. Practically every leaf on Peaches and Nectarines was curled or blistered; the trees have only recently started to make fresh growth. Late Strawberries, Waterloo and Givon's Late Prolific gave fine crops. *Thomas Cox, Hainton Hall Gardens, Lincoln.*

—A favourable autumn last year enabled the wood and fruit buds to ripen well, but the cold, wet spring retarded the trees. During the flowering period we experienced cold, wet weather, which proved disastrous to the Pear, Apple, and Plum crops. Small fruits, Raspberries and Black Currants, were very plentiful. Givon's Late Prolific is our best variety of



FIG. 48.—GUEVINA AVELLANA (SEE P. 109).

old standard trees, although some trained and bush trees are carrying fair crops. Of Plums we have an abundance of Victorias, but most of the other sorts are cropping very badly; there was an abundance of blossom, but all the young growths were killed back by frost. We had an abundance of all small fruits. *William Johnson, Stansted Hall Gardens, Stansted.*

HUNTINGDONSHIRE.—Apples and Pears set badly except in very sheltered positions. Raspberries and Black Currants were more or less failures owing to frosts, whilst they were in bloom and the frost was followed by drought. Early Strawberries were a poor crop from the same causes, but a few good showers about the middle of June helped later varieties to crop heavily. The Fen soil is peaty, over clay and the high land is generally a stiff loam over a clay subsoil. *A. F. Coombe, Ramsey Abbey Gardens.*

Strawberry. *F. J. Foster, Grimsthorpe Castle Gardens, Bourne.*

—There was a splendid show of Apple, Pear, and Plum blossom, but the bulk—especially of Apples—failed to set. Apple blossom was weak from the first, and in many cases never opened properly. The causes were the very open winter, and the cold, wet months of April and May, when the trees were blooming. Our soil is a strong loam. *F. C. Stainsby, Brocklesby Park Gardens.*

NORFOLK.—All fruit trees flowered well; March was an exceptionally mild month, and all trees were in flower early; April was very cold and sunless, with wind in the east, so that the trees failed to set satisfactory crops. Our soil is very light, with a gravel subsoil. *Isaiah Johnson, Catton House Gardens, Norwich.*

(To be continued.)

IRIS DOUGLASIANA.

IRIS DOUGLASIANA (see Fig. 49) is one of the most vigorous and, therefore, the easiest to grow of the Californian group of American Irises. It was named in honour of David Douglas, who collected plants in North America in 1823 and 1824, but it was not until about 1870 that it was brought into cultivation in this country. Even now it is not nearly so widely grown as it deserves to be, and yet there is considerable scope for the plant breeder within the wide ranges of colouring which occur in the flowers of this species. Indeed, one of its peculiarities is that hardly any two seedlings bear flowers of precisely the same colouring and marking and, moreover, they may vary from pale cream through mauve to a deep purple.

The reason why this plant is not as widely grown and appreciated as it should be probably lies in the fact that it is impatient of removal or rather does not lend itself to treatment by the rough-and-ready rule that all herbaceous plants may be moved in the autumn. The rhizomes are slender and, therefore, cannot long survive unless the roots are active. The rhizomes of Bearded Irises are much stouter and can preserve their vitality throughout the winter even when transplantation has taken place so late in the year that root action does not begin again until the spring. If, however, plants of *I. Douglasiana* are moved in May, June or July they will soon establish themselves in their new home provided they are kept partially shaded and the soil is kept moist until the roots have been able to push their way into it.

Iris Douglasiana flowers in May, and as the stems branch and as each spathe contains two or three flowers that open in succession, the display lasts for a considerable time. The infinite variety to be found in a bed of seedlings is amazing and renders it very difficult to give any general definition of the flowers. They are almost invariably veined with a darker shade on a lighter or even white ground, but on the blade of the falls the veining usually disappears and the colour becomes uniform.

The foliage of *Iris Douglasiana* is very characteristic. It is rather thin and wiry in texture with a polished surface and usually tinged with pink at the base. The actual shade of green seems to vary with the intensity of the colouring of the flowers, and the curious dark, brick-red of the old and dying leaves is a colour that probably does not occur in any other species. The leaves remain green throughout the winter and only die away in the spring when the young growths develop rapidly together with the flowering stems.

I. Douglasiana seems to be happiest in a rich, light soil in which there is no great proportion of lime. Seeds should be sown in the early autumn in pots plunged in the open ground and left exposed to the effects of frost and snow. Early in the year the young seedlings will appear, and they then do all the better with the protection of a cold frame. It is important that they should grow rapidly and be planted out where they are to remain as soon as they have made four or six leaves. Then they will have time to make good growth during the summer and to become sturdy and well established plants before the winter. When treated in this way no difficulty will be found in getting them to flower in the following year, and after that each plant will soon develop into a large clump producing annually innumerable spikes of flowers. *W. R. Dykes.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The Late Mr. J. Charlesworth.—I wish to add my tribute to the memory of the late Mr. J. Charlesworth, of Hayward's Heath. Eminent in those branches of horticulture in which most orchidologists excel, he stood alone in his knowledge of the life histories of cultivated Orchids. In his early business days he had the problem of the conditions of the germination of Orchid seeds forcibly brought home to him, and re-

solved, if possible, to eliminate the usual hazards. He fastened on to the fungus symbion as the all-important factor, and then characteristically set to work to investigate it. To understand the task, one must bear in mind that he had no botanical training whatever, and the problem he set himself had not been attacked successfully by professional botanists even under laboratory conditions. Later, when Bernard and Bargeff published their researches, he was in a position to assimilate their results, and was eventually able to perform on a commercial scale operations which one ever regarded with wonder. He seemed to know his individual fungus cultures as well as he did his favourite Orchids. By perfecting his pure culture methods he was able to raise hybrids where capsules contained only one or two seeds invisible to the naked eye; and, where seeds were more in number, the seedlings could be "weeded out," and only the best kept and brought to flower a year or two before their due season. His wonderful results in crossing are well known to horticulturists; the later triumphs, and more especially those still to flower, have only been possible by his methods



FIG. 49.—IRIS DOUGLASIANA.

of culture. Mr. Charlesworth, in his years of investigation, became extremely efficient in the niceties of botanical technique. His primary interest was in Orchid seedlings, but he accomplished many small investigations on the different stages of the life history of Orchids, and also on various subjects which aroused his interest during his omnivorous reading. When he had satisfied himself as to the facts, he presented his slides to any of his friends who were interested. Those who enjoyed his friendship will ever remember his kindly hospitality, his North Country humour, and the very pleasant hours spent in his well-equipped laboratory, and with his beloved seedlings. Mr. Charlesworth ranked as highly as an amateur botanist as he did as a professional horticulturist. *J. Ramsbottom, Natural History Museum, South Kensington.*

A National Rose Garden.—I was pleased to see the note on this subject (p. 80). I have not read the article in the *Nineteenth Century*, but I can claim to be one of the first to advocate a National Rose Garden. Some years ago the *Daily Chronicle* published a note from me on the subject, wherein I suggested that the Crystal

Palace grounds would provide a suitable site. In 1915 the late Mr. Edward Mawley and I were talking the matter over and he asked me to write an article for the *Rose Annual* of that year, which I did. To-day I see more than ever the need of such a garden for our national flower; because, as Mr. Morris Colles points out, we are in danger of losing many grand varieties by the influx of so many often worthless novelties. We want some enthusiastic Rosarian with a deep pocket who would take the matter in hand. I used to believe that a National Rose Garden should be established after the manner of Kew Gardens, but the less we have of bureaucratic control the better for all. Nor do we want any special society to manage the garden. Let it be truly national and maintained by all true lovers of the Rose, who, by the way, are not necessarily confined to the members of the National Rose Society or the Fellows of the Royal Horticultural Society. Such a garden as I have in mind would contain every variety procurable, and every method of cultivation would be demonstrated. In 1914 I visited a public Rose garden in one of the parks at Lyons, and saw there many beautiful old varieties no longer catalogued. The task of collecting the Roses would be a heavy one, and some acres would be needed to plant them in, but it would be worth while. *Walter Eastlea, Eastwood, Leigh-on-Sea.*

Hard, Over-ripe Seed Potatoes.—Under "Answers to Correspondents," in your issue of July 24, I noticed a reply to the effect that "the failure (of Potatoes) is owing to the seed being over-ripe." There appears to be some doubt about the correctness of this suggestion. A few days ago, an inspector was down here investigating the Potato blight, and he said that hard sets were due to a disease named Leaf Curl. Last year I obtained from Sheffield 14 lbs. of Witch Hill Potatoes, once grown in Scotland, which gave a splendid, good and clean crop; not one set failed. I planted them in mid-April, and lifted the crop ten weeks later to ensure the seed being immature. The sets were dried, greened, and stored in a shaded shed. During winter they were kept in a cool but frost-proof place; they were boxed up in mid-February, and planted at the end of March in well-prepared soil which was fairly dry. Notwithstanding all this care, 20 per cent. of the crop failed, owing to the sets remaining hard, with just a few small tubers at the roots. Where the plants were healthy and robust, the result was very good. I know many members of our allotment association have had similar experience; in fact, we have never known a season before this, wherein there were so many failures owing to the seed sets being hard. I am of opinion that this matter requires some further study before we reach a correct solution. *W. Stokes, Sunflower Road, Barnstaple, Devon.*

Alfriston Apple.—During the earlier part of this year, some notes with reference to the value of Alfriston Apples appeared in *The Gardeners' Chronicle*; I was particularly interested in the opinions of your correspondents, although I by no means agree with many of them. We have here a tree of Alfriston planted about thirty years ago, and which generally produces a good crop of fruit. I am sending you a small sample of Apples for your inspection. At our annual exhibition on August Bank Holiday I exhibited a dish of fruits of our 1919 crop, and was awarded the first prize for culinary Apples. I also exhibited a very large dish of fruits of the same variety from last year's crop, but not for competition, and was awarded a certificate of merit for them. The specimens I have sent will show you how well this Apple keeps. We have not found one fruit with a blackened centre, while the quality, when cooked, is still good. *J. F. Mason, Arden Hill Gardens, Atherstree, Warwickshire.*

[The fruits were thoroughly sound and showed no signs of decay, even when cut, but the flesh was mealy. We had no opportunity of testing the fruits when cooked, but they had no merit for dessert purposes.—Eps.]

SOCIETIES.

ROYAL HORTICULTURAL.

AUGUST 24.—The fortnightly meeting of the Royal Horticultural Society, held on Tuesday last in the Vincent Square Hall, Westminster, attracted a fair number of visitors and a satisfactory number of exhibits. A special competitive display of British-grown bulbs was held on this occasion, but the results cannot be regarded as very satisfactory, although the few exhibitors competing staged excellent samples. Awards were made to novelties by the Floral Committee, Orchid Committee and Fruit and Vegetable Committee; an exhibit of annuals was awarded a Gold Medal and a similar award was made to a collection of choice indoor fruits.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. secretary), William Bolton, J. E. Shill, R. A. Rolfe, Frederick J. Hanbury, Stuart H. Low, Fred K. Sander, A. McBean and Chas. H. Curtis.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Heliador (iridescens × Venus), from BARON BRUNO SCHRÖDER, The Dell Park, Englefield Green (gr. Mr. J. E. Shill). A fine hybrid of large size and bright colour, approaching nearest to the best C. Venus. The sepals and petals are finely expanded and coloured clear chrome-yellow. The lip has small, purplish side lobes, folded over the pure white column, the elongated orange coloured median portion widening towards the bright purple front.

AWARDS OF MERIT.

Brasso-Laelio-Cattleya Blenheim Orange (B.-L.-C. Rowena × C. Dowiana aurea), from THE DUKE OF MARLBOROUGH, Blenheim, Woodstock (gr. Mr. Barker). A pretty Blenheim hybrid, with neatly-formed flowers of fine substance, clear orange in colour, with cherry-red markings on the front of the fringed lip, which has gold lines from the base.

Cattleya triumphans Blenheim variety (Rex × Dowiana aurea). In this, as in the original variety, the form and colour of the flower are nearest C. Dowiana, but the present form is lighter in colour than those previously shown. The sepals and petals are. Cowslip-yellow; the lip has Cherry-red markings and gold lines from the base.

Odontoglossum Miguelito Fasey's variety (Doris × Dora), from W. R. FASEY, Esq., The Oaks, Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). A charming hybrid, with large and broadly-proportioned flowers, the inner halves of the sepals and petals pure white, the outer light mauve, the median area being heavily blotched with claret colour. The lip is white in front and blotched with purple around the yellow crest.

OTHER EXHIBITS.

THE DUKE OF MARLBOROUGH, Blenheim Palace (gr. Mr. Barker), was awarded a Silver Flora Medal for an attractive group of hybrids raised at Blenheim, most of which have been previously recorded in these pages. Great beauty and variety was seen in the various crosses, the best being *Laelio-Cattleya Fazeana* (C. Fabia × L.-C. Schulzeana), a good, light mauve flower, with very ornate, deep claret coloured lip; L.-C. Carmencita (L.-C. luminosa × C. Dowiana aurea), rosy lilac with showy purple lip; some excellent *Brassavola Digbyana* hybrids, including *Brasso-Laelio-Cattleya Virginia* (B.-C. Madame Chas. Maron × *Laelio-Cattleya* unrecorded), a large, silver-white flower, tinged with rose; *Brasso-Cattleya Ida* var. *Sunset* (B.-C. Pluto × C. Dowiana aurea), a pretty cream-white flower with purple markings on the lip; *Laelio-Cattleya Weedon aurea* Blenheim variety, a good and richly coloured flower; and the very dark *Cypripedium* F. W. Abbott.

W. WATERS BUTLER, Esq., Southfield, Edgbaston, sent *Laelio-Cattleya Butleri* (L.-C. G. G.

Whitelegge × C. Hardyana Mrs. Waters Butler), a finely-formed flower and a great advance on the *Laelio-Cattleya* parent.

W. R. FASEY, Esq., showed *Odontoglossum Winifred* (illustissimum × Rosella), a good flower, with the petals rosy mauve and the sepals blotched with the same colour on a lighter ground.

PANTIA RALLI, Esq., Ashted Park (gr. Mr. Farnes) showed a good form of C. Hardyana alba.

H. T. PITT, Esq., Rosslyn Park, Stamford Hill (gr. Mr. Thurgood), sent *Laelio-Cattleya Cambria* Rosslyn variety (L.-C. Barbarossa × C. Hardyana), a finely-coloured flower showing much of C. Hardyana.

MESSRS. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group of good *Cattleyas* and *Laelio-Cattleyas*, with a selection of interesting species.

A. J. HOLLINGTON, Esq., Forty Hill, Enfield, sent *Cattleya Princess Royal* (Fabia × Hardyana), resembling C. Hardyana alba; C. Muriel Hollington (Murillo × O'Brieniana alba), a medium-size lilac flower, and a very handsome C. Gaskelliana delicata.

MESSRS. J. AND A. McBEAN, Cooksbridge, showed their home-raised *Odontoglossum crispum* Challenger, a noble, pure white flower, with some markings on the lip.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), John Heal, Andrew Ireland, J. F. McLeod, J. Jennings, Geo. Harrow, G. Reuthe, Sydney Morris, Jas. Hudson, Arthur Turner, H. J. Jones, Chas. E. Pearson, W. P. Thomson, E. F. Hazelton, George Paul, W. G. Baker, W. R. Dykes, William H. Morter, W. B. Cranfield and John Green.

AWARDS OF MERIT.

Aster Haulmark Terra Cotta.—A very beautiful Plume Aster of rich, deep terra cotta colouring. The flowers are large, of good shape and borne on long, stout stalks. Shown by Messrs. ALEX. DICKSON AND SONS.

Chrysanthemum Holcroft 1920.—A robust, early flowering variety, suitable for market purposes as well as for garden decoration. The colour is rich yellow and the type of bloom is that known as Market Japanese. Shown by Mr. W. BOOTS.

Heliopsis Golden Dream.—This appears to be a sturdy type and is also free-flowering. There is good substance in the flowers, the colour of which is described by the varietal name. Shown by Mr. C. TURNER.

Pyrus fiona.—A very decorative hardy shrub, which will be a welcome addition to our yellow-fruited species. Shown by the Hon. VICARY GIBBS.

Gladiolus Golden Dream.—A most beautiful, soft yellow variety, which may perhaps be best described as being of deep primrose yellow colour. The spike is perfectly furnished with large, compact flowers. Shown by Messrs. R. VEITCH AND SONS.

G. Kelway's Monarch.—Another large-flowered *Gladiolus* of good type. The colour is deep rose with a white blotch on the lower segment.

G. Snowdon.—A milk-white flower which has pale lilac hues in the centre and a primrose yellow blotch on the lower segment.

G. Princess Radziwill.—This is of uncommon bluish lilac colour. The flower has darker lines of the same colour at maturity.

G. Kelway's Masterpiece.—A very showy crimson variety, which has a rich carmine-coloured lower segment. This and the three foregoing were shown by Messrs. KELWAY AND SONS.

GROUPS.

MESSRS. SUTTON AND SONS made a most effective display of the best hardy annuals. With the exception of a few *Simflowers*, which were from seed sown in March, all the many sorts were the result of seed sown on May 15, and in this relatively short space of time the plants have produced a glorious show of bloom. Practically every garden annual was represented.

Viscarias, Marigolds, Linarias, Mignonette, Poppies, Coreopsis, Eschscholtzias and others which come into flower fairly quickly one expected to see in such an exhibit, but besides these there were generous vases of annual *Elate* spurs, with long spikes of blooms, *Phlox Drummondii* of many artistic shades and colour; *Lavatera trimestris*, both pink and white varieties; *Nigella Miss Jekyll*, *Polyandrum Ruby Gem* and many others. Besides the great educational value of the exhibit, as showing what a splendid display may be made by annuals sown in the open ground, the artistic arrangement of the exhibit deserves great commendation (Gold Medal).

Besides seedling *Gladioli*, Messrs. KELWAY AND SONS had a large collection of choice named varieties (Silver-gilt Flora Medal).

MESSRS. ALEX. DICKSON AND SONS had an immense collection of *Asters* which, for size, colouring and general effect rivalled, if not excelled, the autumn-flowering *Chrysanthemums*. The central vases of *Terra Cotta*, of rich, almost carmine-rose colour, were particularly attractive, whilst every possible shade of colour was also represented by generous stands or vases of other splendid blooms (Silver Flora Medal).

Mr. AMOS PERRY arranged a great variety of hardy herbaceous plants, prominent amongst which were *Chrysanthemum maximum* *Etoile d'or*, *Liatrix pycnostachya*, many *Phloxes*, especially *Selma*, and *Erigeron* hybrids (Silver Flora Medal).

Mr. MAURICE PRICHARD exhibited many desirable border plants and alpine. Of the dwarfier sorts *Malvastrum Munroanum*, *Zauchneria californica*, *Campanula Mayi* and *Ledum pulchellum* were noteworthy. Bulbous and allied plants were included, and these added to the attractions of the exhibit (Silver Flora Medal).

Mr. J. REUTHE had his customary collection of cut shrubs, border flowers and alpine, amongst which a box of a dozen or so distinct hardy Heaths was much admired. At one end of the group were magnificent sprays of *Eucryphia cordifolia* and also of *E. pinnatifolia* (Silver Flora Medal).

MESSRS. LADHAMS, LTD., staged a good collection of hardy herbaceous plants, which included many desirable varieties of their newer *Lobelia cardinalis* hybrids (Silver-gilt Banksian Medal).

MESSRS. R. and G. CUTHBERT contributed a splendid collection of *Streptocarpus*, for the strain of which they have received an Award of Merit; many *Conifers* suitable for rock-garden planting, and a large group of *Nerine Fothergillii* (Silver-gilt Banksian Medal).

Roses in variety and of pleasing freshness were shown by the Rev. J. H. PEMBERTON (Silver Grenfell Medal), and Mr. E. J. HICKS (Bronze Flora Medal).

MESSRS. L. R. RUSSELL, LTD., set up an attractive group of many handsome stove foliage plants (Silver Grenfell Medal).

MESSRS. W. CUTBUSH AND SONS staged an excellent variety of *Pentstemons*, representing a fine strain and showing first-rate cultivation (Silver Grenfell Medal).

MESSRS. ALLWOOD BROS. brought flowers of perpetual *Carnations* and their well-known *Allwoodii* hybrids (Silver Banksian Medal).

MESSRS. BLACKMOFF AND LANGDON displayed large single blooms of their fine strain of double-flowered and single tuberous *Baccharis*, with secondary spikes of *Delphinium* (Silver Banksian Medal). Early-flowering *Chrysanthemums* were shown by Messrs. W. WELLS AND CO. (Silver Banksian Medal), and hardy border flowers by Mr. W. WELLS, JUNR. (Silver Banksian Medal).

Bronze Banksian Medals were awarded to Mr. G. R. DOWNER, for hardy plants; Messrs. K. LUXFORD AND CO., for early-flowering *Chrysanthemums*; Messrs. MUMFELL AND REAR, for hardy border flowers; Messrs. RUSSELL AND CO., for beautiful St. Bridget Anemones; Messrs. RICH AND CO., for border flowers, including good varieties of *Chrysanthemum maximum*; Messrs. H. J. JONES, LTD., for an excellent collection of herbaceous *Phlox*; and Mr. G. W. MILLER for various border flowers.

Dahlias.

The combined Floral Committee, composed of members of the R.H.S. and National Dahlia Society's Floral Committees, met at 11 a.m.

Present.—Messrs. H. B. May (in the chair), A. Turner, J. Cheal, J. Jarrett, D. B. Crane, A. J. Jones, C. H. Curtis, E. H. Jenkins, J. F. McLeod and J. B. Riding.

No awards were made, but the following varieties were selected for trial at the R.H.S. Gardens, Wisley.

Redwing (Stredwick), a dull-yellow, red-flushed Cactus variety; Moloch (Stredwick), a large and handsome flame-coloured decorative variety; Satisfaction (Stredwick), a rose-pink Cactus variety; Rival (Stredwick), a medium-sized, crimson-scarlet Cactus variety; Peerless (Stredwick), a lovely clear yellow Cactus variety, of fine form; Water Lily (Stredwick), a white decorative sort of stiff form; Africa (Stredwick), a big intense maroon-coloured, decorative variety; Magnet (Stredwick), a rosy-scarlet Cactus variety with yellow centre; Mrs. F. Freeman (Stredwick), a giant decorative variety, light crimson-scarlet; Emperor (Stredwick), a claret-crimson Cactus variety, with purple shading; Nankie Ritchie (Jarrett), a deep crimson collerette variety; Lemonette (Jarrett), an erect, large, light-yellow, Paeony-flowered sort; Red Head (Jarrett), a bold, crimson, decorative variety; and Dr. Tevis (J. T. West), a very large decorative variety, golden flushed over fawn pink.

Fruit and Vegetable Committee.

Present.—Messrs. J. Cheal (in the chair), G. F. Tinley, Ed. Beckett, O. Thomas, P. C. M. Veitch, J. S. Kelly, A. Bullock, F. Jordan, G. P. Berry, J. Harrison, W. Bates, W. H. Divers, W. Wilks and S. T. Wright.

AWARDS OF MERIT.

Apple The Premier.—The parentage of this variety is said to be Gladstone crossed with Worcester Pearmain. The fruit is on the small side, and much resembles a highly coloured fruit of Worcester Pearmain, almost the whole of the surface being coloured dark red. The eye is closed and surrounded by some 7 or 8 ridges caused by a pleating at that part. The basal part, including the stalk, much resembles Worcester Pearmain. The flesh is crisp, solid, sweet and of good flavour.

Apple Peerless.—This is a large, round variety with a greenish-yellow skin, freely marked with dots, as in Ecklinville Seedling, those on the side next to the sun being very pronounced. The eye is very shallow and the segments closed; the stalk is short and there is hardly any cavity. The flesh is firm, white, very juicy and acid. This variety has been grown at Wisley during the past 4 years and has cropped there consistently well. It is in season until Christmas and should prove a desirable addition to late culinary Apples. Both these varieties were raised by Messrs. Laxton Bros.

Melon Victory.—This is a seedling Melon with reticulated golden skin and scarlet flesh. The flavour is good and the edible portion extends to the rind; there also is very little cavity in the centre. The specimen exhibited was a little past its best, consequently the flavour had somewhat deteriorated, but it is obviously a Melon of fine quality. Shown by Mr. EARP, gardener to the Marquis of Camden, Bayham Abbey, Kent.

GROUPS.

A Gold Medal was awarded to J. A. NIX, Esq., Tilgate, Crawley (gr. Mr. E. Neal), for a large collection of indoor fruits grown without the use of fire heat. The exhibit was prettily decorated with Carnation and Asparagus plumosus in vases. It included Peaches, Nectarines, Melons, Pears, Plums and Grapes, all in excellent condition. The bunches of Black Hamburg Grapes were splendid and there were also good bunches of Muscat of Alexandria and Appley Towers. Of the Nectarines, Humboldt and Pineapple were especially good, and there were equally fine fruits of Dymond, Walburton Admirable, Bellegarde and Violette Hâtive Peaches. The Pears included choice specimens of William's Bon Chrétien, and there were choice Jefferson Plums.

Messrs. S. SPOONER AND SONS, were awarded a Silver Medal for 40 dishes of Apples. The

varieties were principally early sorts and all were remarkably well coloured. Among the more noticeable dishes were Lady Sudeley, Jolly Miller, Crimson Quoining, Goodenough's Non-such and Worcester Pearmain.

Messrs. RYDERS, LTD., showed a new runner Bean named Rajah. The pods were more than a foot long and about 1½ inch broad. The seeds are white and very small. The variety was recommended for trial at Wisley.

Dry Bulb Show.

Following the custom of recent years the Society arranged competitive classes for hardy home-grown bulbs, but it was very disappointing to note the apparent apathy shown by our British growers, who did not take advantage of the opportunity of illustrating that many species may be grown as well in this country as abroad. The principal exhibitor in the open classes was Mr. GEORGE MONRO, The Maltings, Spalding, Lincolnshire, who showed excellent samples of Daffodils and Tulips, which plainly illustrated that really first-class bulbs can be produced in this country. The bulbs were all of first size and shape and perfectly ripened, and were of the varieties mostly in demand for market purposes.

THE ANGLESEY BULB GROWERS' ASSOCIATION showed two collections of Daffodils and Tulips from their grounds at the place, the name of which has 56 letters, but which, providentially, is usually abbreviated to Llanfair P. G.

The only amateur exhibit was from Mrs. WALLIS TOLLS, Woodside, Weybridge (gr., Mr. G. Crabb), which included Daffodils, Iris anglica, Chionodoxas and Scillas.

Messrs. RYDER, LTD., staged many excellent samples of Continental-grown bulbs.

SOUTHPORT HORTICULTURAL.

The second annual show of this society was held in the Cambridge Hall on August 13 and 14. It will be remembered that in 1919 arrangements were made for holding the exhibition in a marquee near the sea shore. A gale arose and brought down the tent, but it was quickly re-erected and withstood further tests.

The entries on this occasion were fairly good, and excellent cottage garden and allotment produce was staged.

In the open class for a collection of vegetables, eight varieties, three excellent sets were exhibited, the prize winners being Mr. J. GOULBORN, Formby; Mr. G. BOWDEN, Aintree; and Mr. W. CHARTERS, Formby, in the order mentioned. In the premier set there were excellent Cauliflowers, Tomatoes and Peas.

For six vases of Sweet Peas Mr. E. TOMLINSON, Ainsdale, led with good spikes; Mr. J. GOULBORN staged the winning set of three vases. For a dinner-table decoration Mrs. W. A. KNIGHT, Formby, won with Sweet Peas, Mrs. W. BOND coming second with Roses, and Mrs. W. TOMLINSON third with Sweet Peas. Mr. J. GOULBORN had the leading six bunches of herbaceous flowers; Mr. J. H. PRESTON the best six Violas; Mr. W. BLUNDELL, Southport, the best Asters; and Mr. P. H. MOSLEY, Formby, the finest six Roses.

In the classes open to Southport allotment holders, Messrs W. RIMMER, E. RIMMER, and H. LLOYD led for Potatoes with excellent specimens. Mr. E. RIMMER won the premier position for a collection of vegetables. Messrs W. BLUNDELL, E. O. HALL, R. COOP, and W. ROBINSON were also first prize-winners in this section.

In the garden classes Mr. J. MILLER had the best Kidney Potatoes, and secured the special prize for the best six tubers with fine examples of Majestic.

Messrs. HERD BROS., Penwith, exhibited a charming group of 60 vases of Sweet Peas: the flowers were of more than average excellence. A gold medal was deservedly awarded to this fine exhibit. THE GARDEN SUPPLIES CO., Liverpool, contributed Sweet Peas (an imposing display), Roses and Potatoes, which gained a silver medal.

Mr. J. HATHAWAY, Parks and Gardens' Superintendent, exhibited an attractive group of hardy flowers; and Messrs. J. AND W. BIRCH, Seaforth, showed a collection of Potatoes.

ANSWERS TO CORRESPONDENTS.

BEGONIA GLOIRE DE LORRAINE.—E.E.B.: The poor colour of the leaves is, in all probability, due to a low temperature and an excess of moisture. There were no signs of the presence of mite, thrips, or any other insect pest, nor was fungous attack observable, consequently we are of opinion that the failure is due to some cultural error.

CUCUMBER PLANTS DYING.—J. M. The material was insufficient to enable us to determine the cause of the trouble; and although the mycelium of some fungus was present in the tissues of the stem, we believe that the prime cause of death is to be found in some cultural error or a severe check of some kind.

FIG AND VINE LEAVES.—A. B. C. No fungus was present on either the Fig leaves or the Vine leaves. The unhealthy appearance of the latter is due to intumescences on the under sides of the foliage, and suggests an excess of water at the roots of the Vines and in the atmosphere of the vinery.

MOSS IN LAWN.—E. A. G. If the use of lawn sand has failed to clear your lawn of moss it is quite obvious that the drainage is at fault. Continue to clear away as much of the moss as possible by means of a short-toothed iron rake, but as soon as possible have the lawn effectively drained by means of drain tiles. Meanwhile, accumulate a quantity of very light and moderately rich soil to use as a top dressing when drainage operations have been completed and the moss raked from the grass.

NAMES OF PLANTS.—C. M. The specimens of *Phloxes* were so faded that it was impossible to identify the varieties, but we would remind you that we cannot undertake the naming of florists' varieties of flowers.—J. C. 1, *Itea virginica*; 2, *Raphiolepis japonica*.—K. P. We regret it is quite impossible for us to undertake the naming of florists' flowers.—W. F. D. 1, *Senecio clivorum*; 2, *Rudbeckia laciniata*; 3, *Aconitum rostratum*; 4, *Myrtus communis*.—T. O'C. 1, *Begonia Haageana*; 2, *Astrantia major*; 3, *Phalaris arundinacea variegata*.—W. S. Cydonia (*Pyrus*) *japonica*.—J. S. A. 1, *Campanula linifolia*; 2, *Buddleia variabilis* var.

POTATO LEAVES DISCOLOURED.—F. W. C. The discoloured conditions of the Potato leaves is not due to either fungus or insect. The trouble is commonly known as "rust," and is probably caused by weakness of the stock, consequently a change of seed should be made next season, or a different variety should be tried.

VAPOURER MOTH.—E. H. R. The caterpillars were those of the Vapourer Moth (*Orygia antiqua*). These caterpillars are frequently found in the neighbourhood of London, and sometimes cause extensive damage, especially to Hawthorns. They may be destroyed by spraying with lead arsenate paste at the rate of 1 oz. of paste to each gallon of water.

VIOLAS DISEASED.—H. H. M. It frequently happens that when Violas are grown year after year on the same site they become subject to disease. The investigation of specimens received shows them to be suffering from an attack of *Botrytis*. Pull up and burn all affected growths, and where the disease is very bad it may be desirable to remove and burn the entire plant. Spraying with weak Bordeaux mixture, or a solution of sulphide of potassium, will destroy the fruiting stage of the fungus, and thus check the spread of the disease, but the great point to bear in mind is that all diseased stems and leaves should be burnt, otherwise they will prove a source of re-infection.

Communications Received.—F. P.—A. E. R.—W. C.—A. N.—H. C.—J. C.—G. B.—J. S.—S. B. R. P. B.—D. M.—A. S.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, September 1, 10 a.m.: Bar. 30.1; temp. 62°. Weather—Fine.

If anyone were asked why it is that each kind of plant brings forth its fruit and blossom in due season; why Peaches bloom so early and are so soon followed by the Pear and then by the Apple, he would, we think, be hard put to it to find an answer. Yet if the recent discoveries* of Messrs. Garner and Allard are confirmed, the answer to this question is a simple one. The authors found the clue to the answer in the course of their study of the behaviour of a giant variety of Tobacco (*Nicotiana tabacum*) which, though it continued to grow throughout the year, nevertheless failed under ordinary field treatment to produce flowers. They found, however, that if plants were brought into a greenhouse in autumn they blossomed during the winter, and that seedlings grown during the winter months in greenhouses blossomed in early spring. An investigation of the cause of this behaviour showed that the period of blossoming was independent of the temperature at which the glasshouses were kept; even though the temperature in the house was as high as that prevailing during summer months out of doors, nevertheless the indoor plants failed to bloom in summer. Nor had the intensity of light any influence in determining blossom time; neither an increase nor a decrease in light intensity threw the giant Tobacco out of time. One, and in the author's opinion, very unlikely conclusion remained to be drawn, namely that the blossoming time of this plant was determined by the length of daylight; and that

days of more than a given length prevent this plant from blossoming. Naturally the authors were unaware of a curious anticipation of this conclusion which is to be found in an account* of the behaviour of a curious marine worm known as *Convoluta paradoxa*. This creature only lays its maximum amount of eggs when the hours of daylight neither exceed nor are less than eight hours. This animal breeds best in an eight-hour day. In spite, however, of the unlikelihood of mere length of daylight-time determining blossom time, the authors proceeded to test their hypothesis and found on all hands evidence to confirm its accuracy. The method adopted consisted in controlling the number of hours to which plants were exposed to light and comparing the time of formation of their blossoms with that of similar plants exposed to light throughout the day. Thus *Aster linariifolius*, a wild American plant which normally blossoms in September, was "forced" into bloom by June 18 by the simple expedient of limiting its daily exposure to light to the hours between 9 a.m. and 4 p.m. Sister plants treated in all respects similarly, except that they were exposed to all the daylight hours, did not bloom until September. Other similar specimens which had a twelve-hour day—exposed to light from 6 a.m. to 6 p.m.—blossomed at an intermediate time, namely July 19. Here evidently is a plant which requires for blooming time short daylight periods. In nature it has to wait till the autumn is approaching before it gets in the open the length of day that it requires. But if the short days are given to it by artificial means, it flowers precociously. Similarly with *Viola fimbriatula*, a wild species which blooms in April; of plants transferred from the field on June 9, those which had a limited daily light exposure—from 9 a.m. to 4 p.m., produced both open purple and cleistogamous flowers in July, but those which had all the hours of daylight bore cleistogamous flowers only; a fact of special interest to botanists who generally assume that decreasing light intensity is the cause of the formation of cleistogamous in lieu of normal open flowers. Nor is the effect of shortening the daylight period only to secure precocious blossoming, it includes also a hastening of the time of ripening of the seed.

National Dahlia Society.—The annual exhibition of the National Dahlia Society will be held on Tuesday, the 7th inst., in connection with the fortnightly meeting of the Royal Horticultural Society Vincent Square, Westminster.

Mr. Edward Bull.—The many friends of Mr. Edward Bull, of the firm of Bull's Plant Food Company, will be interested to learn that he has been elected unopposed a Councillor of the Borough of Hove.

"John Snell" Memorial.—It is felt by Potato breeders and growers that some fitting memorial to the late Mr. John Snell should be established in such a way that the work on which Mr. Snell was engaged at the Potato trials at Ormskirk should be continued, and that some stimulus should be given in order that his aims might be accomplished. Accordingly, the Ormskirk Potato Society has opened a subscription list and limited the subscriptions to one guinea each, and has, we understand, collected somewhat over £100. It is proposed that (1) An oil painting of John Snell, suitably inscribed, should be hung in the office of the Potato Testing Station at Ormskirk. (2) That two medals should be given annually, a silver and a bronze. Both medals to bear a John Snell head, the silver medal to be awarded to the person who had done yeoman service to the Potato industry by either: (1) Organising new methods of combating Potato diseases and by

stimulating improvements generally; (2) original research in breeding; or (3) long success in producing new varieties. The bronze medal would be awarded to the person raising the best seedling, which, on testing at Ormskirk each year, proves to be immune. The National Institute of Agricultural Botany have been asked to act as trustee in this matter, and they will arrange for the carrying out of this work which, if it is to be done properly, will cost in all close on £200. All interested in Potato breeding, Potato growing and Potato diseases are asked to contribute and to send subscriptions to the Secretary, Potato Testing Station, Ormskirk.

Forestry Resources of the Empire.—As a result of the deliberations of the British Empire Forestry Conference, held in London in July, a number of resolutions were framed, and these have now been issued as a White Paper. The conference, which consisted of delegates representing the United Kingdom and the Dominions and Crown Colonies, resolved that each of the Governments of the Empire should lay down a definite forest policy to be administered by a properly constituted and adequate forest service. Approval is given to a scheme of research in which the chief problems are grouped under the heads of the growing of forest crops and the utilisation of timber and other forest products. The State is declared to be primarily responsible for forestry research work, and therefore for its control and subsidy. It may be carried out either directly by the State through its own officers or through the medium of the universities or other institutions. With regard to the United Kingdom, the Committee suggest that requirements would be met by the establishment of a research institute to deal with problems connected with the growing of forest crops, and a research organisation which should include a central institute to deal with problems connected with the utilisation of forest products. The Conference further decided that it should be a primary duty of forest authorities throughout the Empire to establish systematic schemes of forestry education. The Conference strongly supported the suggestions and recommendations for the constitution of an Imperial Forestry Bureau as being essential to the proper development of the forestry resources of the Empire.

Syrup from Sugar Beet.—In view of the shortage of sugar for jam-making, the following method of preparing syrup from Sugar Beet, given in the *North British Agriculturist*, may be of use to those who have the fruit but not the necessary sugar for making it into jam:—
"Wash and brush clean, peel thinly, and rinse in cold water a dozen or more Sugar Beets (not ordinary garden Beet). Slice them as thinly as possible and put into a large pot. Cover them with water, adding more as it evaporates. With the first water add one fluid ounce, or an overflowing tablespoonful of white vinegar for each Beet. Boil until quite soft, the longer the more sugar, say four or five hours. The object of the vinegar is to eliminate the salts in the Beet, which make it unpalatable. Strain off the liquid in which is the sugar and evaporate it to a syrup, which may be used for any sweetening purpose. When the liquid is fairly thick, it may be transferred for convenience to a smaller pan and the evaporation completed. In jam-making the actual quantity of Beet syrup required per pound of fruit should be gauged by tasting, but ten good-sized Beets should yield syrup equal to one pound of white sugar. Part of the evaporation of the Beet liquid may be done after the fruit is added, when the longer the boiling the more concentrated and sweeter will be the preserve."

Increased Prices for Sulphate of Ammonia.—Owing to the increase in railway rates, which came into force on the 1st inst., the Ministry of Agriculture and Fisheries has sanctioned an increase of the agreed maximum prices for sulphate of ammonia by 3s. 6d. per ton in the case of all deliveries made on or after September 1, 1920, except when such deliveries are in fulfilment of existing unconditional contracts for delivery at the original prices. The original maximum prices will also remain in force for deliveries made ex works or by road.

* "Effect of the Relative Length of Day and Night and other Factors of the Environment on Growth and Reproduction in Plants."

* *Plant Animals: A Study in Symbiosis.* By F. Keeble. Cambridge University Press.

Destruction of Eel-Worms in Narcissi.—Mr. J. K. Ramsbottom, (working in conjunction with the firm of Messrs. Geo. Monro, Limited, on their bulb farm at Spalding) and Messrs. Chas. Hearson and Co., Ltd., London, have perfected an apparatus whereby bulbs affected by eel-worm may be treated by the hot-water system. In all cases where the hot-water cure has been tried it has been found exceedingly difficult to maintain an even temperature, which is necessary both for the killing of the eel-worms and preventing injury to the bulbs themselves. This difficulty has, we understand, been effectively overcome in the machine invented by Messrs. Hearson and Co. The machine, of which a demonstration was given at Spalding on August 3, has been designed to treat $1\frac{1}{2}$ cwt. of bulbs at a time. The bulbs are put into a sort of gunny-bag, and these in turn are put into the inner perforated tank. Four bags, holding about 42 lb. of bulbs, are treated at a charge. The heat may be generated by oil, gas or by electricity. The temperature that it is necessary to maintain is 110° F., and this is secured by a thermostatic arrangement that appears to work admirably. Other machines are being manufactured for the use of specialists. It is hoped that the machine will also be effective for killing the destructive *Narcissus* fly larvae. The firm of Messrs. Charles Hearson and Co., Ltd., was recently taken over by Messrs. Spratt's Patent, Limited, and has a reputation amongst scientists for its biological, chemical and physiological research apparatus.

Heliopsis "Orange King."—Mr. Arthur Turner, of the Royal Nurseries, Slough, points out that the variety of *Heliopsis* exhibited by his firm, which gained an Award of Merit at the last meeting of the Royal Horticultural Society, was named "Orange King," and not Golden Dream, as given in our report on page 113.

"Canon" Hall Muscat Grape.—Mr. Spencer Pickering, in the *Journal of the Royal Horticultural Society*, Vol. XLV., clears up the uncertainty as to the origin of this variety of Grape and gives the correct rendering of the name as Cannon Hall. He writes as follows:—"Is there any means of regaining orthography for the Cannon Hall Grape, which is generally quoted as 'Caron Hall,' or even Canon Hale'? It's sponsor was not a pillar of the Church, but my grandfather, John Spencer Stanhope, of Cannon Hall, near Barnsley. When travelling in Greece in 1814, he sent home cuttings of various vines, and one of these originated the Cannon Hall Grape. He exhibited it at Versailles about 1822, and as it beat all competitors there, he presented a plant of it to the Botanical Society in London, and allowed it to become public property on the understanding that it should be named the 'Cannon Hall Grape.' The original vine came to grief about thirty years ago through a ladder falling on it." There has been much diversity of opinion as to the proper spelling of the name, but Canon Hall has been accepted as the correct rendering by pomologists in the past. Barron, in *Vines and Vine Culture*, states that the origin of this Grape is uncertain, and that the earliest trace of it is at Canon Hall, Yorkshire, from whence it was sent to Lord Bagot. It is figured in *The Transactions of the Horticultural Society*, 2nd series, I., p. 169. Mr. Pickering's note not only settles the correct nomenclature, but clears up the origin of this famous Grape.

Legacy for a Recreation Ground.—The late Mr. Mullin, J.P., of Oldham, Lancashire, who died on June 24 last, leaving an estate of the gross value of £11,009, left the residue of his estate to Oldham Corporation for providing a playground or recreation ground for the borough.

"Buckeye" Draining Machine.—The Ministry of Agriculture has arranged for a public demonstration of the "Buckeye" Draining Machine, to be held on Sir Douglas Newton's estate at Croxton Park, St. Neots. The machine cuts trenches for tile drains, and an extensive series of such drains will be shown. A description and illustration of the machine appeared in the Ministry's Journal for February last. The machine is working on the estate, and can be seen up to September 8.

Agricultural Training for Disabled Ex-Service Men.—Provision has been made by the Ministry of Agriculture for the training of disabled ex-Service men in the various forms of agriculture (including horticulture, market gardening, and poultry-keeping) under the Government scheme for the training and re-settlement of disabled men. Training is given, as a general rule, for a period of twelve months at special training centres established by the Ministry in different parts of England and Wales under the local administration of County Agricultural Executive Committees. In view of the limited capacity of agriculture as an industry to absorb disabled men, it has been decided that no further applications from disabled ex-Service men for agricultural training will be considered unless the application has been lodged with the man's Local War Pensions Committee on or before September 30th, 1920. Moreover, no applicant will be accepted for agricultural training unless in the opinion of the Agricultural Executive Committee there is a reasonable possibility that he will become fitted, physically and otherwise, to follow an agricultural occupation.

New Superintendent of Cambridge Botanic Gardens.—Mr. F. G. Preston, whose portrait is reproduced below has been appointed Superintendent of the University Botanic Gardens, Cambridge. For some eleven years Mr. Preston has filled the office of foreman of the

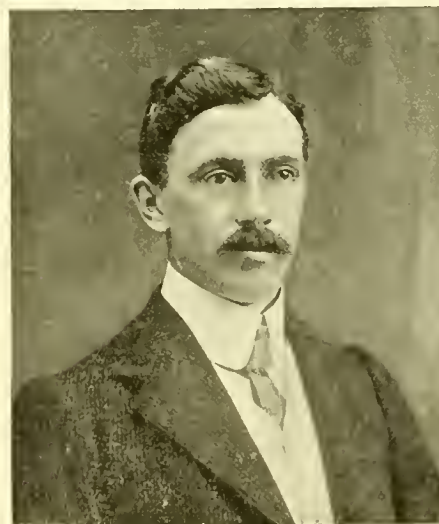


FIG. 50.—MR. F. G. PRESTON, THE NEW SUPERINTENDENT OF THE CAMBRIDGE BOTANIC GARDENS.

outdoor department, and in recent years has acted as senior foreman of the gardens. The new superintendent was for five years at Kew Gardens and previously to that he had general experience in private establishments. It is obvious that the new superintendent will possess an intimate knowledge of the contents of the Cambridge Botanic Garden. In his capacity of foreman he was very successful in the management of the staff under his control, and the appointment is sure to be a popular one in the gardens. A few years ago he instituted a Gardeners' Mutual Improvement Society, which attracted many of the young gardeners in the district, and is doing good work. The demands upon a botanic garden official are many and varied, and the position calls for one who, like Mr. Preston, possesses, besides technical skill, urbanity and courtesy. Mr. Preston has contributed several articles to these pages, accompanied by excellent photographs of his own taking.

Official Appointments.—The following appointments are announced in the *Kew Bulletin*, No. 6, 1920:—Mr. W. Nowell, Mycologist on the staff of the Imperial Department of Agriculture in the West Indies, as Assistant Director of Agriculture, Trinidad; Mr. W. Harris, Superintendent of Public Gardens and Plantations, Jamaica, as Assistant Director of Agriculture and Government Botanist in that Colony; Mr. T. G. Mason, B.A., as the Economic Botanist in

the Imperial Department of Agriculture, West Indies; Mr. F. G. Harcourt, Sub-foreman on the gardening staff of the Royal Botanic Gardens, as Agricultural Superintendent, Antigua, Leeward Islands; Mr. H. W. Jack, Agricultural Instructor, Agricultural Department, Federated Malay States, as Economic Botanist in the Department; Mr. J. N. Milsum, Superintendent of Government Plantations, Agricultural Department, Federated Malay States, as Assistant Agriculturist in the Department; Capt. J. McDonald, B.Sc., of Bristol University, as Assistant Mycologist in the Agricultural Department, British East Africa; Major R. T. Wickham, late pilot officer, Royal Air Force, as District Agricultural Officer in the Department of Agriculture, Uganda.

Appointments for the Ensuing Week.—Tuesday, September 7:—Royal Horticultural Society's Committees meet; Scottish Horticultural Association meet; National Dahlia Society's Show. Wednesday, September 8:—Royal Caledonian Horticultural Society's Annual Exhibition (2 days); Edinburgh Royal Caledonian Society's Show (2 days). Friday, September 10:—Newarthill Society's Show. Saturday, September 11:—Avonbridge Society's Show; Kilbarehan Society's Show; Selkirk Society's Show.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Potato Murrain.*—A letter from Mr. Berkeley, in another column, connects the Potato murrain with the attacks of a kind of mould, analogous to that to which Mr. Hassall attributes the destruction of decaying Apples, and Professor Bell has favoured us with some observations which entirely confirm this opinion. And this is only what was to be expected; for as soon as living matter loses its force, as soon as diminished vitality takes the place of the customary vigour, all sorts of parasites acquire power, and contend for its destruction. It is so with all plants and all animals, even with man himself. First comes feebleness, next incipient decay, and then spring up myriads of creatures whose life can only be maintained by the decomposing bodies of their neighbours. Cold and wet, acting upon the Potato while enervated by excessive and sudden growth, caused a rapid diminution of vitality, portions died and decayed, and communicated the contagion to the parts in contact with them; thus was prepared a field on which the mouldiness could establish itself, and the moment this was effected the evil gained new vigour; for once in possession of a decayed spot, the spore (or mycelium) of the mouldiness spreads rapidly into parts to all appearance still uninjured. And thus an evil in itself too great becomes infinitely increased. This fact is of the first importance with reference to the preservation during winter of what may remain of the crop. It will never do to pit the Potatoes in heaps, covered with straw and earth. If this system is pursued we anticipate the total decay of such heaps. It is very improbable that, with all possible care, the Potatoes will be so sorted that no infected tubers shall be left in the heaps. One such tuber will communicate the maldy to a ton; for it will soon form mouldiness on its own surface; the Potatoes in contact with it will be infected; they will give it to their neighbours, and so on.

In the process of pitting, every Potato must be separated from its neighbour by solid earth. Then, if one tuber decays, it will not be able to spread the mischief, because, being imbedded in soil, it will not be in contact with others. Potatoes, therefore, should be stored in heaps; a single layer of them should be covered with earth, well worked in between them; then another layer should be thoroughly imbedded as before, and so on. If straw could be had, we should even be inclined to thatch the heaps, so as to keep them dry; and, at all events, if they are in the open air we should draw trenches round them so as to carry off all the water. Wet is favourable to decay, and also to the attacks of mould plants; dryness is an enemy to both. The drier, therefore, the Potatoes can be kept in their pits the more chance there will be of keeping sound those that are so when laid up. We cannot too strongly impress upon gardeners the extreme importance of this precaution.—*Gard. Chron.*, September 6, 1845.

NOTICES OF BOOKS.

The British Charophyta.

This*, the most recent volume of the Ray Society's publications, is issued to the subscribers for the year 1917, and bears that date on the back of the cover; the title page records the actual year of publication. British botanists have long been expecting the monograph of the British representatives of this remarkably isolated group of cellular cryptogams, to which the brothers Henry and James Groves had devoted many years of study and observation. The much regretted death of Henry Groves, in 1912, deferred the completion of the work, but his brother has been fortunate in securing the collaboration of Canon Bullock-Webster, and we trust that there will be no undue delay in the appearance of the second volume. The work is fittingly dedicated to Henry Groves, "who did much to advance the study of the British Charophyta, and upon whose work much of the systematic portion of the following pages is based."

Botanists of the generation which is no longer young have tender recollections of Chara, which in the eighties of last century was studied as a plant-type in elementary classes. For study of simple structure, following the course of development and observing the streaming movement of the protoplasm *Chara* was an excellent subject; but later it was realised that as a plant type it was isolated, and led the student no further. However, as a group for special study, particularly for the microscopist, the Charas offer a beautiful and interesting subject, and botanists owe a debt of gratitude to the brothers Groves and Canon Bullock-Webster for the painstaking and scientific systematic presentation of the group.

In the introduction, the authors give a brief resumé of the various views which have been held as to the rank and position in the vegetable kingdom, which should be accorded to the Charophyta. Early botanists placed the few members known to them under *Equisetum* or *Hippuris*, but Linnaeus regarded them as a genus of Algae. In the present monograph, the authors follow Sachs in considering the group as a separate division, co-ordinate with the Thallophyta. The existence of fossil remains in the Lower Oolite demonstrates the great antiquity of the group, which at the present day is distributed almost throughout the world. Though normally growing entirely submerged in fresh or brackish water, subterranean states of a few species are very occasionally found in bog-heads, and the nearly dried up beds of small streams. The most hardy and ubiquitous is *Chara fragilis*, which occurs "in every country and clime, in ice water at the north and in the hot springs of the Yellowstone." The most favourable habitat is on soft thick mud, and for this reason the ditches of our Eastern Fen Country and the Norfolk Broads are particularly prolific.

As the first British record, *Gerard's Herbal* (ed. Johnson, 1633), is cited, where two kinds of "Horse-tail" are mentioned, both of which are referable to *Chara vulgaris*.

Fifty pages of the volume are devoted to a general account of the structure and development, which are well illustrated by numerous text-figures. There is also a glossary of technical terms used in special relation to the group, and a table of the Latin adjectival terms used in the systematic descriptions of the species.

The first serious attempt to work out the distribution of the Charophyta in the British Isles was the *Review of the British Characeae*, by H. and J. Groves, printed in the *Journal of Botany*, in 1880. Since then a series of papers by these authors in the same Journal has continued the work, including descriptions and figures of fresh species added to the British list, new County records and other notes. In the present monograph the authors recognise six genera grouped under the divisions Nitellae, including *Nitella* and *Tolypella*, and *Characeae*, including the genera *Nitellopsis*, *Lampro-*

thamnium, *Lychnothamnus* and *Chara*. *Lychnothamnus* is not represented in Britain. The remaining five genera include 32 British species, ten of which belong to *Nitella* and 16 to *Chara*. Keys are supplied to the genera and to the British species. Full descriptions in English are given of genera and species, the synonymy and geographical distribution have been carefully worked out, and references are given to literature and ex-siccata; notes on variation, affinities and other points of interest are also included under each species. The plates, most of which are from drawings by Miss Mary Groves, are beautifully executed, and are an important feature of the volume. A. B. R.

TREES AND SHRUBS.

OSMANTHUS ARMATUS.

For this very distinct and remarkable evergreen (see Fig. 51) our gardens are indebted to Mr. E. H. Wilson, who introduced a living plant for Messrs. J. Veitch and Sons from China in 1902. He describes it as a rare plant in a wild



FIG. 51.—OSMANTHUS ARMATUS.

state, occurring in woods throughout Western Hupeh. In texture its leaves are amongst the stiffest and hardest among hardy shrubs; they are three inches to six inches long, three-quarters to one and a-half inch wide, oblong-lanceolate, sharply and coarsely toothed, the netted venation very conspicuous on both surfaces, and quite glabrous. Like other species of *Osmanthus*, the leaves of which are spiny-toothed on juvenile plants, they change their character as the plants get older, until ultimately they bear leaves scarcely toothed at all, or even quite entire. Probably none of the plants in cultivation has yet reached this stage; when they do they will apparently be less striking than they are now. That will be compensated for in some measure by the production of the fragrant, creamy-white blossoms which come in clusters in the leaf-axils, each flower about $\frac{1}{4}$ in. wide. The fruit is egg-shaped, $\frac{3}{4}$ in. long, and is described as "violet-black." This *Osmanthus*—a near ally of the Olive—is perfectly hardy in the home counties, and thrives well in rich loamy soil. It is easily increased by means of cuttings. B.

SENECIO GREYII AND S. LAXIFOLIUS.

W. T. S. calls attention on page 49 to two of the shrubby Groundsels of New Zealand, which certainly deserve cultivation in this country where the climate permits of their full development, but that, so far as I have seen, is only in our milder districts. The hardier of the two species mentioned by W. T. S. is *Senecio laxifolius*, from the South Island; but it is far inferior in brilliancy and profusion of bloom to *S. Greyii* from the North Island, nor does it grow to the same size. I would discard it altogether in favour of the other, were it not that it comes into flower six weeks later than *S. Greyii*, which began here this year on June 12, *S. laxifolius* following on July 21. Intermediate in date between these two, and very similar in bearing large panicles of yellow flowers, is *S. Huntii* from the Chatham Islands, which opened its first bloom on June 21. This is a much loftier subject than the other two, attaining almost the height of a small tree; but flowering freely when no more than three feet high. A fourth species of this interesting family began to flower here on July 3, producing short racemes of rayless flowers devoid of ornamental quality. The shining leathery leaves, ivy green above, and clothed with buff tomentum beneath, give it distinction as an attractive evergreen. *Herbert Maxwell, Monroith.*

MYRTLES.

VARIETIES of the delightful, old world, evergreen Myrtle should always be grown in the flower garden. In districts where the Myrtle fails to survive the winters in the open, either as a bush or against a south wall, it may easily be grown in tubs, copper vessels or Italian oil jars, and given the protection of a house in winter. In such receptacles Myrtles are admirable subjects for the embellishment of the formal garden, the terrace and the portico. Standards of the common Myrtle (*Myrtus communis*), if carefully shaped, are useful for some bedding schemes. Cuttings of half-ripened shoots root readily if inserted in a cold frame at the present time.

Branches 6 in. long, inserted in bottles of water suspended from the roof in a cool greenhouse, will also form roots. Seeds may be sown in sandy soil and placed in a temperature of 65° to germinate. When in flower one Myrtle plant in a dwelling room will fill the air with exquisite fragrance. *Sidney Legg.*

* *The British Charophyta*, by James Groves and George Russell Bullock-Webster. Vol. I. Nitellae. 8 vo., pp. xiv, 141, with 20 plates and 25 text-figs. Ray Society, London, 1920.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BAISCOR, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

The Cool House.—The chief occupants of the cool Orchid houses are the various species and hybrids of *Odontoglossum* and the *Odontiodas*. In many collections these beautiful plants are represented in large numbers, and when the ease with which they can be grown, their free flowering qualities, and their decorative value are considered it is surprising that this group of Orchids is not more largely cultivated. In a collection of *Odontoglossums* and *Odontiodas* there will be some plants in bloom at various seasons of the year. In consequence, repotting will be spread over a long period. The majority of these Orchids flower during the spring and summer months, therefore the bulk of the repotting may be done at the end of August or early in September. The cool nights and humid atmosphere prevailing now are more conducive to root action than excessively hot weather, and the plants are less likely to lose their leaves.

Potting Compost.—The compost suitable for *Odontoglossums* consists of A1 fibre and good peat in equal parts, with a sprinkling of chopped Sphagnum-moss and finely crushed crocks. When good peat is obtainable, it should be used in preference to the various fibres. Partly decayed Oak or Beech leaves may be added, especially if the plants do not grow freely. Ordinary flower pots should be filled one-third of their depth with drainage material, which should be covered with either a small quantity of Sphagnum-moss or the rougher parts of the compost. It is important that repotting should be done at the right time, and this is when roots are about to push out from the base of the new growth. Plants in small pots may be potted without much disturbance to the roots, but when the compost has become sour, or the growths have reached the edge of the pot, the plants will need more attention, but over-potting should be guarded against. Where the old compost is in a decayed condition, it should be shaken from the roots, and, if any of the latter are dead, they should be cut away. At the same time it will be advisable to reduce the back pseudo-bulbs to two or three behind each growing point. The new compost should be pressed fairly firmly about the bases of the plants and brought up level with the rim of the receptacle. When potting is completed, give sufficient water to wet the whole of the compost. Specimens shifted with little disturbance of the roots will need close attention, or the ball of soil will become dry, while the fresh material will be quite moist.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens,
Kew.

"Malmaison" Carnations.—Layers that are well rooted should be watered freely the day before it is proposed to lift them. In common with all composts for Carnations in pots, the potting soil should consist largely of good medium loam, with the addition of a very little leaf soil. Lime in some form is essential for the health of all Carnations, and may be supplied in the form of old mortar rubbish, which serves the double purpose of supplying the lime and securing porosity. A five-inch potful of fine bone meal should be added to every bushel of compost, and also a seven-inch potful of dry wood ash, which is valuable on account of its polish content. The rooted layers may be potted into large sixty-sized pots, but where they have rooted freely it may be necessary to use pots of a larger size. Stand the young plants in cold frames, and shade them for a few days after potting, if the weather is bright. When new roots have formed afford plenty of air, and keep

the foliage dry, as a stagnant atmosphere and moisture on the foliage promote just the conditions to start "rust" disease. As they require it, successional batches of perpetual flowering Carnations should be potted.

Richardia africana.—Where Arum Lilies were planted out they should now be lifted and potted. A few days before lifting the roots should be cut around with a sharp spade. Where they are in demand for cut blooms, or as large specimens, *Richardias* are best placed in ten-inch or twelve-inch pots, but for general purposes strong single crowns in six-inch or seven-inch pots are most useful. Where they have been rested in pots *Richardias* should be turned out and repotted. They are gross feeding subjects, and require a rich compost, which is best supplied by adding well decayed cow manure to the potting soil. When in full growth *Richardias* respond to liberal supplies of diluted liquid manure.

Calceolarias.—Put on herbaceous *Calceolarias* as they require it, giving them a light, rich compost, and at all times providing them with a cool, moist position, in a low pit, where they may be kept close to the roof glass. Continue to propagate, by means of cuttings, such species and hybrids as *C. integrifolia*, *C. hyssopifolia*, *C. angustifolia*, *C. Clibranii* and *C. Allardii*.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weaver
Castle, near Cardiff.

Cauliflowers.—Autumn-sown Cauliflowers produce better results than those raised in heat in the early spring. Seeds should be sown now in soil of not too rich a nature and in a position fully exposed to the sun. To keep them sturdy, the seedlings should be transplanted as soon as large enough, and allowed a distance of four inches apart. Before the approach of severe weather, they should be potted into five-inch pots or transferred to a position where they may be protected by movable lights. Early Snowball, Magnum Bonum, Early London, and Early Giant are varieties suitable for present sowing.

Celery.—About this time it is necessary to commence earthing Celery which is growing in trenches. This operation should be done whilst the plants and soil are in a dry condition. After removing useless, outside leaves and offshoots, the plants and the soil to be used for earthing up should be dusted freely with slaked lime as a deterrent to slugs. To prevent the soil reaching the hearts of the plants, the latter should be enclosed in paper, lightly tied, to keep it in position. Not more than four inches of soil should be added on one occasion, and successional earthings should take place at fortnightly intervals, until sufficient to complete the blanching has been added. The soil placed around the plants should be in a fine state and not packed too lightly. After each operation of earthing the ties should be removed, or they may cause restricted growth.

Spring Cabbages.—The earliest sown plants are ready for transference to their permanent positions. To prevent the seedlings receiving a check should the weather be dry, water the seed-bed the day previous to transplanting. This crop requires rich ground, and unless it is planted in soil that was well manured in the spring of this year, a dressing of decayed manure should be applied. After digging the ground, make it firm to prevent the plants developing soft, sappy growth, conditions which favour injury during the winter from severe frost. Plant firmly, but not deeply, in shallow drills and afterwards water the roots. Large varieties should be allowed a distance of one foot nine inches each way, but the rows for smaller varieties should be fifteen inches apart and one foot between the plants in the rows. Future cultivation will replace the soil in the drills and provide protection to the stems—a distinct advantage during severe, rough weather. After the wet summer, slugs are proving more troublesome than usual; to guard against injury from these pests, each plant should have a mound of fine ashes placed around it.

THE HARDY FRUIT GARDEN.

By T. PATRMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Peaches.—These fruits are ripening very slowly this year owing, doubtless, to the cold nights experienced of late. It will be advisable to remove a few of the leaves, or tie back any that intercept the sun's rays. This will also assist greatly in the colouring of the fruit. See that the roots have sufficient moisture; trees planted at the foot of high, south walls require water very frequently. Whenever water is applied let it be given copiously. Trees of later varieties, that are carrying heavy crops, may be assisted by giving them a dressing of a concentrated fertiliser. Liquid manure from the farmyard is to be recommended: its application should be discontinued immediately the fruit is approaching ripeness. The foliage should be syringed in the afternoons of warm days to ward off red spider. Attend to the gathering of the fruits as they ripen and store them in a well-ventilated fruit-room until they are required for use. If stored on wood wool, the fruits will keep in a better condition if they are moved on frequent occasions.

Nectarines.—The remarks on Peaches with regard to watering and feeding of the trees apply equally to Nectarines.

Autumn-fruiting Raspberries.—This crop is very promising this year, as a large amount of rain fell during the growing season and added much to the vigour of the flower trusses. Where these have not yet been given support, it will be necessary to erect temporary trellis along the rows. Drive stout stakes in the ground at each end of the row and others at intervals in the row. Stout tar string or wire may be strained horizontally from post to post, which should be six to seven feet in height. Wire or stout string may then be strained on top to support the netting to protect the fruit from birds. The best varieties to grow are Belle de Fontenay, Queen Alexandra, and the new perpetual Raspberry Lloyd George. This last variety was sent me for trial four years ago, and I cannot speak too highly of its cropping qualities. It produces its fruit in large clusters, the berries are of a large size, and the flavour is excellent. As an experiment this year, when thinning the young growths in April, I planted a row about 25 yards in length to produce canes for next season's planting. But to my surprise, a good percentage of these will give me an excellent crop of late fruit this autumn.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDRICK CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Pot Strawberries.—Owing to the moist weather young Strawberry plants in pots have made rapid growth, and watering from this time onward will be a most important operation. Frequent changes of position or rearranging of the plants are favourable to healthy and sturdy growth, gradually extending the space as the foliage increases, and removing weeds and runners as become necessary. All the plants should be carefully watered by hand in preference to using the hose over the leaves on scorching, hot days. Syringing the plants on fine evenings with soft water will help to keep the foliage clean and healthy. Much depends on the size of the pots and the quality of the compost as to the use of stimulants. As a rule, pot-bound plants will benefit by having weak diluted liquid and soot-water applied to them to the end of September, to help to build up the crowns. Let the plants be open to sun and light and keep the soil free from worms; the roots as well as the crowns will then have favourable conditions for ripening in this cold, sunless weather.

Melons.—Hasten the development of these plants with all possible speed by closing the house early with sun-heat and moisture, according to the state of the fruits. This early closing will economise fire-heat, but the time has arrived when a little artificial warmth is necessary to

maintain a suitable degree of warmth, with night air to prevent an accumulation of too much moisture. Watering and syringing require equally careful attention, and here the advantage of having late plants in pots will be apparent, as the feeding roots are close to the sides of the pots. Do not attempt to force these late fruits beyond their normal size by excessive feeding, as medium sized Melons keep longer and are of better flavour.

Frame Melons.—This crop is nearly over, but plants with unripe fruits must not be allowed to flag; at the same time the supply of clear water must be limited, otherwise the finest fruits will crack, and will be deficient in flavour. The bottom heat should be tested and, if found to be too low, the deficiency must be made good, as warmth at the roots is of the greatest advantage.

Late Grapes.—Grapes in late houses should now be nearly finished colouring, but where they are still unripe keep the pipes steadily warm and give free ventilation on all favourable occasions. A free circulation of warm, dry air is most conducive to the proper ripening of the wood and fruit. Keep all the laterals pinched to admit light to the interior of the house. Choose a fine, dry day for watering the borders and do this work in the morning. Examine the bunches of Grapes on these and other vines at short intervals, and remove any mouldy berries before they infect others.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Originality in Design.—Visits to various gardens usually afford pleasure and instruction, especially where different kinds of plants are grown and different styles of arrangement are adopted to suit the various subjects on different soils and situations. Originality is the hall-mark of successful flower gardening, but repetition, so often practised, gives rise to monotony. The skilful cultivation and artistic presentation of neglected or uncommon groups of plants, may lead an enthusiast to raising varieties or hybrids, and so further enrich our gardens. For this purpose it is necessary to choose only one or two species, but these must be suitable to soil and locality; the successful result might not easily be repeated elsewhere. Repetition is often carried out without due regard to environment; flagged pathways and rustic pergolas are examples which may be cited. The garden lover should not aim at exact imitation of pleasing examples seen elsewhere, but endeavour to evolve an original scheme from the suggestions they afford.

Light and Air.—Trees and shrubs have made exceptional growth this season, and careful thinning, either by the entire removal of certain specimens or the judicious curtailing of branches, will be necessary during the coming autumn and winter. Consideration should be given this matter at the present time, as it is more easy to determine the best course to pursue whilst the full leafage of deciduous subjects remains. The destruction of natural form should be avoided, and it is often better to remove a tree completely than to mutilate several closely-planted specimens in an endeavour to obtain sufficient light and air for all. The disfigurement of trees and shrubs by close clipping—other than necessary hedges and dividing lines—destroys form and beauty; moreover, it is waste of labour. In the case of many large trees, the trunks may be trimmed of superfluous growths for the purpose of exhibiting the beauty of stem and undergrowth.

Roses.—The flowering of rambler Roses has been somewhat late this season, but the young shoots growing from the base are well advanced. As the plants finish flowering, remove sufficient of the old, main shoots to allow the best young growths to develop and ripen; weak, lateral, flowering shoots may be slightly shortened. Climbing or Pillar Roses, to whatever section they belong, do not require drastic pruning. Supply liquid manure freely to the roots during the next few weeks and guard against attacks of mildew.

CULTURAL MEMORANDA.

ANNUALS FOR POT-CULTURE.

WHERE annuals are grown in pots for decorative purposes, seeds should be sown during September. They may, according to requirements, be sown in pots, pans, or boxes, and stood in cold frames until they germinate. One of the essentials to success is thin sowing, so that the plants may never suffer from over-crowding. The great thing to avoid in the cultivation of annuals in pots is a check of any sort, for, unlike plants of a perennial character, they never recover and do well after a check. When large enough to handle, transfer the seedlings to small pots, or, better still, prick them out in boxes until

makes the successful cultivation of annuals so difficult that it is wise to defer the sowing of seeds until the New Year. The results are obtained almost as quickly, even though the plants are not quite so large. *Foreman.*

CHOISYA TERNATA.

THE fragrant Mexican Orange Blossom, *Choisya ternata*, is not considered hardy in the North. A raised bed of deep, very free soil, overlaid with large rocks, provides suitable conditions conducive to the successful cultivation of this plant in bush form, in somewhat cold districts. Once well established, *Choisya ternata* takes very little harm from frost and produces clusters of blossoms twice each season. Propagation is easily effected by short cuttings inserted in sand, in a temperature of 55°. *S. L.*



FIG. 52.—SWEET PEA MASCOTT'S HELIO; COLOUR OF FLOWERS, HELIO-BLUE.

SWEET PEA MASCOTT'S HELIO.

they have attained a reasonable size, as this will suffice until they are transferred to relatively large pots and thus one potting is saved. Subjects which transplant badly should be sown directly into pots, and afterwards thinned to one, two, or three plants in a pot, as desired. Annuals should at all times be kept cool, and receive plenty of air on all favorable occasions. The most popular and useful subjects for pot culture are *Schizanthuses*, *Clarkias*, *Godetias*, *Nemesias*, *Statice Suworowi*, *Collinsia bicolor*, and its variety *candidissima*, and the tall branching *Larkspurs*. Many of the dwarfier subjects may be grown if desired, and *Nemophila insignis* and *Platystemon californicus*, make charming basket plants for the cool greenhouse. In the immediate neighbourhood of London, the absence of sunshine in winter

This beautiful variety of Sweet Pea (see Fig. 52) gained an Award of Merit at the meeting of the R.H.S. on July 27 last. It is a notable addition to the range of colouring in these popular annual flowers, although the tone is not easy to describe; helio-blue, as the name indicates, best fits it, although shades of mauve, grey, and heliotrope may be found on close inspection of the petals, which are not so much waved as in some other varieties. The form of the flower is very charming, and the bloom is of large size. The variety is evidently of robust habit, for most of the spikes exhibited carried four flowers. The raisers are Messrs. Ireland and Hitchcock, Mark's Tey, Essex.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA *

NO. 21.—WIND AND WATER PASS.

CODONOPSIS is another race abundantly represented in these parts. I have already described the big-belled yellow one whose delicate-leaved embraces circle up the Bamboo stems in the alpine woods of Sabiya Kaw: but there is also another one there—half-climber and half-erect, with ugly, podgy, little bells of dull straw colour. This is not worth having, nor is there any overpowering charm about another, which occurs in copious on Hpimaw Hill, though this, indeed, has flowers of clear white, with a simple suffusion of mahogany-rose veining that does not reach far up from the base. But on the Pass there lives a real beauty, which seems not to be a climber at all, growing erect, a foot or fifteen inches high, with very large blossoms of palest French grey heavily flushed and veined densely at the mouth and boldly at the base with purple lines. Of quite different character, again, is yet a fourth species, which occurs, but rarely, in dells of the warm valley region. As with all the others, one can smell it from afar, and, just as one fancies one must be coming on a whole drove of foxes, turning a corner, there, mounded up like a six foot haystack over all the smaller bushes, is a sheeted mass of this new Codonopsis, covered profusely with long narrow tubes of lavender-blue, without any veining at all, that swell to a point at their tips, but never seem to open properly.

This I found on my way to the Wind and Water Pass. The Wind and Water Pass is one of the low passes in the South that lead easily over into China. A glade on this side is the *locus classicus* for *Primula Beesia* and *P. helodoxa*, and, though I rather dislike the former, and very much distrust the latter, I felt it might be of interest to get seeds from their native station, even though I greatly fear that no *Primula* from 8,000 feet is ever likely to be winter-hard in England, if it hails from many miles south of Hpimaw itself.

Nor is the Wind and Water Pass even surrounded by high alps, such as might a little brace up its climate and the constitution of its plants; but here the frontier ranges tail away

into low jungled hills of not more than 10,000 feet at the most, while the Pass flows softly over among them, buried in the steamy oppression of the Rain Forest. Through the Rain Forest, indeed, the way continues throughout, from the first day after turning southward from Hpimaw, along the valley. As limestone, for the first time in my experiences here, prevails all along, even to the Pass itself, one might have expected exciting variations in the flora. But at first there is disappointingly little. In the open valley of the first stage, indeed, there is abundance, over the bracken slopes, of a very pretty Orchis with remarkably broad bracts and flowers of lovely coral-pink. But this is general in the open lowlands of the region, as is also, though very much more rarely, an even more attractive little terrestrial Orchid, with graceful flights of flowers like golden *Ixias*. The only limestone speciality of any note in the valley appears to be a remarkable *Lobelia*, often six feet high, copiously branching into long sprays of mauve or purple blossom all up its stem.

But soon we enter the Rain Forest, and continue thus, up and down, all the rest of the way, without relief or variety. For the Rain Forest is a depressing region, with its eternal monotony of evergreen gloom and the dense oppression of its atmosphere. In the darkness great *Arisaemas* flourish, and *Lilium giganteum* towers in seed, and handsome arborescent *Araliads* droop tropical-looking foliage; but the dank twilight is no friend to flowers, nor the close steaminess any harbinger of hardiness. Gradually, however, matters improve as the track slowly ascends, and comes at last so high as to bring us into the zone of the Big Hemlocks and Big-Leaf *Rhododendrons* at 9,000 feet. And here the path has to cross a sharp little divide, separating the Lai Kam Valley on the North, running up to Hpimaw, from the contributory valleys on the South, running to the Feng Shui Ling. Heights and divides always suggest hope, even in the woodland zone. I saw, beside a stream, plastered flatly out on a mossy rock, a seedling Big-Leaf *Rhododendron*, with large, dark, oval foliage, very crinkled and solid-looking. I gazed again, and it was no *Rhododendron* at all, but a new *Primula*, clearly of the *Davidii* group. Not that there was any trace of flower, or even of seed, only a wisp of mouldering straw from each crown remained to tell one that the plant bloomed on a scape. But a curious and probably a valuable species, if only there had been lingering seed, or distance did not prohibit hope of successfully sending plants. It lives always on the very edge of trickling water, in deep dells and hollows in the depth of the forest, and only on the north side of the divide. Here it loves the rich woodland soil, and splays itself flatly out, looking like a dark, flat, and few-leaved *Primrose*. Already it has matured the round, crimson knob of its next year's activities, and those of previous seasons leave their traces behind in the form of a running tuber, with a rounded swelling for each season, often showing some specimen to be a veteran of ten or twelve years or more. The only other hint I have as to its qualities is derived from a passer-by in April, who talked of an apparent *Primula* hereabouts, with "heads of green flowers." Nothing could more clearly point to a *Davidii* *Primula* in fruit, with the thickened, flattened, enlarged green calyx so characteristic of the section. And such an occurrence shows yet again the heart-rending character of these forest-muffled ranges, where miles of arduous and agonising exploration will probably yield the plant-collector nothing, while

the omission of a hundred yards may possibly have cost him a treasure.

On the crown of the divide, though, there is a treasure not to be missed. For this is a classical spot for *Beesia cordata*, and here *Beesia cordata* accordingly is, growing in the same cool, rich, mist, forest conditions as suit *Epimedium*, and not unlike an *Epimedium*, in effect, but that its crowns are single and do not run into mats, while its ample, pointed, glassy leaves of emerald green have an even greater handsomeness. Nor do the flowers lag behind. In the dried specimen they look small and dingy and poor: in reality they are of a brilliantly pure, cold white that quite lights up the dark woodland with their loose, airy spires. Unluckily, all my seedling-spikes got broken by the coolies on the way home; but *Beesia* would not anyhow be an easy thing to catch on the hop. For the little "pod" hangs at a slant, and suddenly gapes at the tip; whereupon out rolls the small, round seed, as immediately and automatically as a marble of a tipped coal-scuttle. But with *Beesia* and this divide conclude my present happy experiences of the Wind and Water Pass. True that down in the dells of the forest on the other side is abundance of *Primula seclusa*, also in its *locus classicus*. But *P. seclusa* is no other than the rather coarse and inferior *Mollis* *Primula*, on which I have already commented adversely as occurring ugly in lowland, coppiced glens on the way up to Sabiya Kaw. It shall have its chance at home, though, of course, even if I trust its hardiness as little as I appreciate its charms. But as to the Wind and Water Pass, this was the limit of my approach to it; for now the wind and waters from which it justly has its bad name so excessively prevailed against me that, after waiting four days in a deluge that never ceased by day or by night, I concluded at last to return to Hpimaw and there await a more favourable moment, in the cleared conditions of November, for returning to the Wind and Water Pass after its by then more fully ripened seeds, and I need hardly say that, immediately on my arrival home again, the weather yet a second time ironically cleared up and became brilliant. *Reginald Farrer*.

MESEMBRYANTHEMUM UNCINATUM.

THOSE who have seen the perennial *Mesembryanthemums*, or Noon Flowers, in bloom in the warmer and sunnier parts of the south, have always a great desire to try them in their gardens—a desire which is frustrated by their inherent tenderness, which eventually causes them to be relegated to the conservatory, greenhouse, or sunny window, where they display their beauties to the fullest extent, and without succumbing to our more inclement winters. The only hardy species with which I am acquainted is *M. uncinatum*, which will stand the cold of an average winter. I did lose it in an almost arctic winter some twenty years or so ago, after I had grown it for a considerable number of years, so that I consider it hardy except in rare winters. It was always, however, a shy bloomer, and it was but seldom that I had the pleasure of seeing its red flowers. The plant itself, however, is so distinct in its appearance that it is worth growing, even if it does not bloom. It is said to be six inches high, but after some years it may attain as much as a foot in height, as with me, and forms a woody plant bearing many branches with curious angled foliage, succulent but hard, and of a glaucous colour. It requires a very sunny place and a dry, thoroughly-drained soil, to secure its permanence. Propagation is effected by cuttings. *S. Arnott*

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, April 24, May 29, July 10, and July 31.



H. T. ROSE, GEORGE DICKSON

H. T. ROSE, CHATEAU DE CLOS VOUGEOT

THE ROSARY.

TWO FINE CRIMSON ROSES.

(See Coloured Supplementary Plate.)

GARDEN Roses are conveniently divided into two classes, the bunch-flowered, which include the ramblers and dwarf polyantha varieties, and those in which the flowers are borne more or less singly. The latter class, with which we are now concerned, have again two main divisions, (1) those with full flowers, large enough to be shown in an exhibition box, or to be placed on the table in a specimen glass—conveniently called exhibition Roses; and (2) decorative Roses which are not so suitable for these purposes, being either too small for the exhibition box or else more or less single, or thin, Roses, having a relatively small number of petals.

One of each of these two last-mentioned types is illustrated in the coloured plate accompanying the present issue. Both are crimson and among the darkest of these respective groups, both grow vigorously and both are notable for fine fragrance.

George Dickson at its best is an excellent type of the exhibition Rose, large, full and well formed, a good grower and deliciously fragrant; it keeps its form well and is a first-class Rose for showing in a box. It is not surprising that when Messrs. A. Dickson and Sons brought out this Rose in 1912, they thought it worthy to bear the name of the veteran Rose grower who, I believe, was the founder of their firm.

Nevertheless it has some rather serious faults. Regarded as an exhibition Rose, a large number of its flowers are apt to come quartered, i.e., with a confused centre, and therefore in order to obtain a few first-rate flowers considerable numbers of plants have to be grown. On the other hand, if we consider it from the point of view of a plant for the decoration of the garden the bloom is rather apt to hang its head, the flower stalk not being strong enough to keep the flower upright. The plant is a fine, strong grower, very different in this respect from H. V. Machin, another fine exhibition Rose; the foliage suffers seriously from mildew and is very difficult to keep clean from this pest.

Recognising all these faults, George Dickson is still so grand a Rose when a perfect specimen is found and so easy to grow that it is likely to be cultivated by exhibitors for a long time to come.

The second variety, Château de Clos Vougeot, owes its principal attraction to its fine fragrance and magnificent deep, blackish crimson colouring and velvety sheen. No one would think of setting it up in an exhibition box. Amongst a collection of specimen blooms it possesses neither the size nor the perfection of form required; but it will look well in a class for decorative sorts, or for the decoration of the house. I think it is a Rose whose chief merit lies in its service as a cut flower. Château de Clos Vougeot was sent out by M. Pernet-Ducher as a H.T. in 1903. Doubtless he may have found some difficulty in classifying it. I do not remember seeing its parentage recorded, but I think it must have some affinity with the China Roses on account of the form of the flower. There is nothing to suggest this in the foliage, which is quite unlike the fine, rather glossy leaves of the Chinas, nor does the plant resemble the bushy habit of the China growth, while it differs from these also in its fragrance. These characters of foliage, fragrance and habit of growth probably and rightly determined the raiser to group it among the H.T.s, but thinking chiefly of its blossoms, I am accustomed to grow it among my Chinas, and so to regard it, but that is merely for one's own convenience.

The growth of Château de Clos Vougeot is good and the foliage large. Plants generally flower freely and well, nevertheless the variety has certain faults which have caused disappointment to many who have been attracted by its magnificent colour and tempted to treat it as a bedding Rose. For this purpose it is not well adapted, because by its habit of growth the flowers are carried on long shoots, which grow nearly horizontally, and, secondly, be-

cause of its liability to attack from black spot, in which case the bed may become defoliated in mid-summer.

No doubt in fine warm weather black spot and mildew may be kept at bay by dusting the foliage with sulphur, but I have yet to find a method of treatment which is completely effectual in wet weather, such as we have had in the past July. Lime-sulphur sprayed on, perhaps, is as good as anything I have tried, but this spoils the foliage and it seems to be rather a detriment than an absolute preventive of this plague.

Although its habit of growth seriously militates against its value as a bedding Rose, and a variety such as Covent Garden, which is making a fine bedding Rose, is much to be preferred for this purpose, nevertheless Château de Clos Vougeot has such a magnificent colour and so delightful a fragrance that we ought to grow it, but I think its place should be in as open a position as possible and rather outside the Rose garden proper than in it. *White Rose*.

which *C. polyvaria* gave in experiments in segregation.

All these Campanulas are easy of culture, and flourish in most kinds of soil, but it is important that the rooting medium be well drained. They are especially at home in the rock garden, and provide a wealth of blossom in summer, from June to August.

PRIMULA FARINOSA ALBA.

ALBINO flowers are not always as desirable as those of the ordinary or typical colouring, but there are exceptions, as in the case of the white form of *Primula farinosa*, the native Bird's Eye Primrose. Unfortunately, however, many plants sold or collected as the albino of *P. farinosa* are not pure white, there being frequently about them a tinge of lilac or palest rose. Those who possess Parkinson's *Paradise* will remember his description of the white variety, which he calls "*Paralysis minor flore albo*," and describes it as differing little or nothing from the typical one "save that in



FIG. 53.—*CAMPANULA CARPATICA* FLOWERING IN THE EDINBURGH BOTANIC GARDENS.

THE ALPINE GARDEN.

CAMPANULA CARPATICA.

THE Campanulas, or Bell Flowers, include a large number of valuable garden plants, mostly perennials, and with flowers either of blue or violet shade, or white. One of the most popular species is *C. carpatica*, a native of Transylvania, and growing some 9 inches to 12 inches high. The flowers of the type are a beautiful blue, and they are developed in the greatest profusion, as may be seen on reference to the illustration in Fig. 53, which shows colonies of the plants in the rocky at the Edinburgh Botanical Gardens. Being such a valuable garden flower it is not surprising that there are many forms and varieties in cultivation; indeed, the *carpatica* group of *Campanula* embraces some of the best border and rock garden plants of the genus. In an article published in the issue for August 19, 1905, Mr. E. H. Jenkins describes several of the best members of the group, and since that time there have been other fine additions. A variety known as *polyvaria* was illustrated in Fig. 25 in *Gard. Chron.*, July 25th, 1908. It will be remembered that Miss Pellew contributed a very interesting paper on "*The Genetics of Campanula carpatica*" in our issue of November 8, 1919, in which she referred to the striking results

seemeth a little larger both in leaf and flower, and that the flowers hereof are wholly white, without any great appearance of any circle in the hyaline of them, unless it be well observed, or at least being nothing so conspicuous, as in the former." This grand old gardener was not speaking without full warrant, and Mr. Reginald Farrer, in *My Rock Garden*, introduces us to the real white *farinosa*, which he states was found by Mrs. Saunders, of Wennington Hall, in a field near by, and in "unold quantities." Mr. Farrer describes it as pure white with a golden eye, and answering precisely to Parkinson's description. The present writer has had the pleasure of seeing this delightful *Primula* in the garden at Wennington Hall, and can vouch for the accuracy of Mr. Farrer's glowing account of this exquisite plant. It seems as easily grown as the type, if one is permitted to employ the word "easily" with a plant which is difficult to retain in many places, but which in a wild state grows so freely. In gardens it is difficult to provide for it the naturally moist conditions which surround it in nature without giving it too much moisture about its crown, causing it to decay there. It seems to need a position such as amongst grass, where it has moisture within reach of its roots, yet not about the crowns in spring. The typical *Primula farinosa* is a great beauty, and its white counterpart is a veritable gem. *S. Arnott*.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 111.)

SUFFOLK.—Apple trees flowered well, but drought, lasting from April to the end of June, on this soil, which is very light overlying chalk, caused the majority of the fruit to drop. Pear trees did not flower well, but Plums and Cherries bloomed abundantly, and in some instances the trees are bearing enormous crops. Small fruits were very early, and the quality was first-rate. Strawberries were gathered in the open on May 22. *E. Matthews, Lanwades Hall, Kennett.*

— A very poor fruit crop has to be recorded on this peninsula, between the Orwell and the Deben, a spot famous for sunshine and drought. An exception, however, must be made with regard to small fruits, which have been good and plentiful. Strawberries suffered considerably from drought during the first fortnight in June. Apple trees had an abundance of blossom, but the 23 days on which rain was recorded here in April, together with cold, frosty nights, proved disastrous to the setting of fruit, hence the reason for such poor crops. Very early, also, late flowering Apples are carrying moderate crops. Aphides, commonly called "Blight," has been a scourge, especially amongst Plums. *Arthur Turner, Orwell Park Gardens, Nacton, Ipswich.*

— The prospects of a fruit crop are not quite so disappointing as might be imagined. There is a sprinkling of Apples on many trees, especially on Bramley's Seedling, Lane's Prince Albert and Cox's Orange Pippin. Many Plum trees are carrying a fair crop, but the trees suffered severely from aphid attack in April. Pears are a total failure; the same remark applies to the Cherry crop in the Polstead district of Suffolk. *E. G. Creek, West Suffolk County Education Office, Shire Hall, Bury St Edmunds.*

4. MIDLAND COUNTIES.

BEDFORDSHIRE.—Raspberries did not flower so freely as usual, and some of the first berries were shrivelled up by the very hot weather of early summer. Pears are almost a failure, and many of the usually reliable Apples such as Pott's Seedling, Duchess of Oldenburg, Beauty of Bath, and Baumann's Reinette are very sparsely cropped. The soil of the district is, on the whole, sandy, though here and there underlying stratas are of a heavy nature, even clayey. Our garden lies rather low, and the nature of the soil of practically all positions where fruit trees are growing is heavy—one spot savouring of a liverish clay. *C. Turner, Amptill Park Gardens, Amptill.*

BUCKINGHAMSHIRE.—A most disappointing season for fruit in general. Adverse climatic conditions seriously affected the greater portion of the fruit crops in this district. Plums, Prunes, and Damsons are in some orchards complete failures. Most trees are badly blighted, and on the whole the crops in both garden and orchards are small. Of bush fruit, Gooseberries and Red Currants cropped the best. Of Strawberries Givon's Late Prolific is better than any of the early or mid-season varieties. Our soil is a heavy, retentive loam resting on clay, and the natural drainage is bad. *W. Hedley Warren, Aston Clinton Gardens, Tring.*

— The hardy fruit crops around here are the worst that have been experienced for some years. I attribute the failure to late spring frosts, and cold north-east winds when the trees were in bloom. There was an exceptionally good show of blossom, but practically all was destroyed, except in very sheltered situations. Mildew is very prevalent in places owing to much wet. Our soil is a rather heavy loam on a gravelly subsoil. *Geo. Taylor, Bulstrode Gardens, Gerrard's Cross.*

— The fruit crops in South Bucks are almost a failure. Apples, with the exception of early varieties, such as Grenadier, Lord Grosvenor, and Keswick Codlin, are very scarce. Cherries, for which this part of Bucks is noted, are a complete failure in many large orchards; not a dozen sieves full have been picked.

Plums are better, and will be about an average crop. Peaches and Nectarines are good average crops, and the trees are clean and healthy. Strawberries set well, but the heavy rains and cold nights at the end of June and early July caused the berries to rot. Bush fruits were plentiful. I attribute the failure of the Apple and Pear crops to the heavy rains and cold nights during the blossoming period, and in part to the heavy crop in 1919. *Geo. Page, Dropmore Gardens, Maidenhead.*

— Never within the memory of the oldest inhabitant of this district was there such a show of fruit blossom as in last spring, and probably never were the fruit crops more disappointing. Whether the failure is due totally to the spring frosts is questionable, as the few orchard fruit trees this season with heavy crops are those that failed last year. I would rather infer that the majority of the orchard trees overtaxed themselves with last year's heavy crop. Oddly enough in these gardens, the Plum and Damson crops are enormous. Apples and Pears, too, are fair crops, and Black Currants were above the average. *G. F. Johnson, Waddesdon Gardens, Aylesbury.*

CHESHIRE.—In all my gardening experience this is the very worst season for fruit. We had only two dry days during April and May, accompanied by very low temperature during the night. The result is almost a total failure of the fruit crop (in a good fruit neighbourhood). The trees bloomed profusely, but the texture of the petals was thin and papery, scarcely any fruit setting. *Alfred M. Jones, Marbury Hall Gardens, Northwich.*

— The fruit crops are undoubtedly the worst in this locality on record. I attribute the cause to continual rain whilst the trees were in bloom, for the pollen was never dry, and in a lesser degree to the scarcity of bees. *Philip Bolt, Manor House Gardens, Middlewich.*

— The fruit crops are a complete failure. The show of blossom on all kinds of fruit trees was splendid, but the continued heavy rain prevented the pollen from getting sufficiently dry for fertilisation. Although the trees were heavily syringed, the winter moth did much damage also, with the result that Apples, Pears, Plums, Damsons, Sweet and Sour Cherries are complete failures. Gooseberries and Strawberries were splendid crops of good quality. Black and Red Currants and Raspberries were an average quantity. The oldest resident in this part of Cheshire does not remember such a poor year for tree fruit. Our soil is a red, heavy loam on a subsoil of sand. Potatoes are a good crop, being clean and healthy. Vegetables generally are of excellent quality. *James B. Allan, Tirley Garth Gardens, Torporley.*

— The general failure of the Apple, Pear, and Plum crops in this district is largely due to continuous wet weather from the end of March until the second week in May. The only two varieties of Apples which are bearing are Mère de Ménage and Lord Grosvenor, and amongst the Pears are Louise Bonne of Jersey and Beurré Rance. Raspberries and Gooseberries were excellent, but Cherries and Plums were almost total failures. *James Atkinson, Lockington Lodge Gardens, Hazel Grove, near Stockport.*

— The fruit crops in this district are the worst in my experience for close on thirty years. Apples, Pears, and Plums (the staple hardy fruits) are complete failures. Of bush fruits, Black and Red Currants, and Gooseberries were just average crops. Strawberries were under the average, and, owing to the continued wet, the season of the fruits was a very short one. There was abundance of blossom on Apples, Pears and Plums, but very few fruits set, owing to wet and inclement weather. Insect pests have been abundant, in spite of spraying. The winter was a very mild one, and the conclusion is that an ordinary severe winter keeps things in check, and is followed by better crops of all hardy fruits than a mild one. *N. F. Barnes, Eaton Gardens, Chester.*

— The fruit crops, especially Apples and Pears, are the worst I have experienced for over twenty years. There was an abundant show of fruit blossom, but the long spell of wet

and cold weather was unfavourable to the fruit setting, and nearly all the fruit trees have been infested with aphides. Pear and Plum trees on walls have fair crops. Strawberries were an average crop, but quite half the fruit was spoiled with the continuous rains. Raspberries, Gooseberries, and Currants were all good, but the majority of the trees are more or less blighted. The soil here is a good, strong loam on clay, and a dry season is much better here than an excessively wet one. *Edward Severn, Combermere Abbey, Whitechurch.*

DERBYSHIRE.—The fruit crops are the worst experienced during the twenty-four years I have been here. Apples were very promising when in bloom, but cold winds, not frost, destroyed most flowers. Pear trees had a very poor show of bloom, but we did not expect a large crop as we had a record crop last year. Strawberries were very fair, but the continued wet weather spoilt a great portion of the crop. Gooseberries, Currants and Raspberries were very fair. The soil is a heavy loam on a clay subsoil. This district has an average of nearly 40 inches of rain. *P. G. Mills, Glossop Hall Gardens, Glossop.*
(To be continued.)

VEGETABLES.

IMMUNE EARLY POTATOS.

SINCE wart disease has become so prevalent in many districts many immune varieties have been discovered, and we have now a fairly good selection of sorts which have so far proved resistant to this dreaded disease. There has, however, been very few first early immune varieties on offer until this year.

Edzell Blue is an old Potato, well known, and much esteemed throughout Dorsetshire, where it was raised many years ago. This is the variety which is universally grown by cottagers and smallholders in that district. It was not much known outside that locality until about three years ago, when the demand for immune varieties brought it into prominence. The Ministry of Agriculture classified it as a first-early, but, strictly speaking, it is not a very early sort, and is not usually ready for lifting before the end of July. It is of excellent quality, and although the skin is of a deep purple colour, the flesh is pure white throughout. The popularity of Edzell Blue is greatly increased by the fact that it is a good keeper, and may be used till late spring. It should always be lifted whenever ripe—which is usually about the middle of August—as otherwise the quality deteriorates.

This year two new early varieties came into commerce, Arran Rose and Dargill Early. These are both immune to wart disease, and are likely to fill a much-felt want. I had a few rows of each growing alongside Epicure, Eclipse, and Edzell Blue. The first-named was raised from green, well-sprouted seed, and was ready for use at least ten days before Eclipse, which were slightly sprouted. A few days later Arran Rose and Dargill Early were ready, but the seed of neither of those two had been sprouted, which accounts for them being later. If they had been given an equal chance with Epicure I do not think there would have been much difference between them in the time of cropping. Edzell Blue was fit for use about the same time as Arran Rose and Dargill Early, but this variety also had the advantage of being slightly sprouted.

Arran Rose is an oval-kidney shaped sort with pink skin, producing a heavy crop of good-sized tubers. This Potato, when cooked, is inclined to be of a darkish colour, which rather spoils its appearance on the table. The quality, however, is very good.

Dargill Early is a variety which I think will rapidly become an established favourite. It is a beautiful white kidney sort, and produces an excellent crop of splendid quality tubers that boil beautifully. Where it is necessary or advisable to grow immune varieties, I would most certainly recommend a trial of those two new sorts, especially Dargill Early. *John Stewart, Givon*

HINTS ON EXHIBITING VEGETABLES.

YEAR by year witnesses an increasing number of exhibitors of vegetables at shows, the newer generation of gardeners evincing, if anything, an even keener interest in this branch of horticulture than the older cultivators. Oftentimes, when setting up a big exhibit of this nature, many of the younger men put questions to me, and their employers ask similar ones, which may be summarised for all practical purposes under two headings (1) Is it worth it? and (2) How is it done?

To questions under the first heading I always and unhesitatingly reply, "Yes! It is worth it," and give in explanation of my views the opinions which follow. Growing for exhibition is unquestionably worth while, and I would urge all employers of gardeners to encourage it, and every gardener to aim for the highest ideal possible, because a man that is raising with showing in mind certainly endeavours to the utmost to grow the finest class of vegetables he can, and the garden that he tends yields, therefore, far finer crops than it would if he lacked the objective. Moreover, the increasing popularity of exhibiting has undoubtedly been the principal cause of the enormous progress in the standard of vegetables, owing to the demand that has existed for higher class varieties, which demand has fostered the work of the propagator and producer of new sorts.

With regard to question number two: "How is it done?" a complete reply would be very lengthy, were I to deal with it minutely and effectively, but there are several cardinal points that stand out very prominently, and may be dealt with within the limits of this short article. No secret process, or black magic, is requisite for the great work of vegi-culture from the period of seed sowing until the vegetables appear, a credit to their grower, on the exhibition stand, and the whole basis on which success in show work rests is solely careful, skilful work in the growing, combined with keen watchfulness and untiring effort, so that the man who is raising exhibition vegetables is always aiming to produce better results than he has attained in the past.

These terms require a certain amount of definition in order to render them more than mere words. "Careful and skilful work" is a term used for the purpose of classifying a number of operations which, combined, ensure perfect cultivation. The preparation of the soil is possibly the most important of these, and the would-be exhibitor must attend primarily to the trenching and working of his ground, the addition of necessary plant food, the employment of lime to correct soil acidity, and the maintaining of the rooting medium in a light, well-filled, aerated condition, employing the best methods to these ends. The next important item is probably the selection of the varieties of the vegetables which he intends to grow, and be well up to time with sowing and planting. Nowadays the grower of vegetables realises the real value of only raising the very best varieties, and will only employ the well tested sorts obtained from a reliable firm, of seedsmen (this is most important!) and this point is equally urgent when applied to growing for culinary purposes, for what cook or housewife desires ill-grown specimens of poor quality?

Another factor which has to be taken into consideration is the behaviour of particular varieties on the soil of a particular garden, or, owing to its aspect, location, etc., for different soils give different results, and oftentimes a variety which does well in one district, is unsatisfactory in another owing to different conditions. Careful note must be made of such happenings, together with a record of the period of time requisite to attain the highest point of perfection for certain dates, so that accuracy of sowing and planting becomes in time almost a mechanical act.

"Keen watchfulness" refers chiefly to the need of guarding crops and preventing the ravages of plant diseases, both fungous and insects, and damage by rodents and birds. Any and all of these troubles may very soon spoil a

crop, and where the additional incentive of exhibiting is added to the zest of cultivation the grower soon defends his crops, and attacks his enemies, by which means the vegetables for table use are enormously benefited.

"Untiring effort" is a broad term which will cover, firstly, the carrying out to the highest degree the necessary operations for the best results. Not only the staking and tying of such vegetables as need this attention, at the proper times, but also the every-day tasks of hoeing, mulching, watering, spraying, and feeding of the plants, in a correct and able manner, together with such points as lifting and blanching of such vegetables as require these treatments; and, further, the sowing and planting in such a way as to maintain full supplies of excellent quality. Secondly comes the work entailed to prepare an exhibit for the show staging, so that all the specimens are in excellent order, perfectly clean, well prepared, and carefully packed. Lastly comes the untiring effort that leads to ultimate success, where, if in the event of non success at the commencement of showing, a not unlikely happening, grit and determination carries a man on with his efforts until he attains the premier position.

So much for the explanation of my phrases! I will now give a few further hints when the show specimens have been gathered, cleaned, and prepared. Always carry to the show tent more

scope in the staging of a big group of vegetables as many a floral group. The photograph reproduced in Fig. 54 of a group of vegetables which I had the pleasure of exhibiting at the meeting of the Royal Horticultural Society on July 27th last, will convey some idea of the truth of my assertion. I am pleased to relate that this exhibit won considerable commendation, and gained the Society's highest award, a gold medal. Throughout this effort, the principal points I aimed at were the production of vegetables of first-class quality, excellence of shape and colour, medium-sized specimens of high culinary value, rather than monstrous specimens unsuitable for table use, all set up in such a way so that the various colours, ranging through whites, yellows, pinks, reds, purples, and green shades should be so carefully and artistically combined and blended, that the whole would form an arresting exhibit of picturesque appearance, and this idea is, I feel sure, worthy of adoption by all exhibitors, so that their skill in the art of producing vegetables of excellent quality may be combined with artistic exhibiting. I should like to see the principal societies offering substantial prizes more frequently for a collection of vegetables on a given space. When one considers the enormous dietetic value of fresh vegetables, it is surprising to me that far more encouragement is not given to one of



FIG 54.—COLLECTION OF VEGETABLES EXHIBITED BY HON. VICARY GIBBS. AWARDED A GOLD MEDAL AT THE R.H.S. MEETING ON JULY 27, 1920.

specimens than are required, in case of mishap, whilst a spare dish or two to substitute others in a collection is always advisable. The immense value of spare specimens was well emphasised to me a week or two back, when a competitor in a local show, having put up a dozen fine Roses in a competitive class, a fellow competitor by a careless movement crushed to pieces one of the best blooms. The one who caused the injury was profoundly sorry, but the owner was not greatly upset, and I rather wondered at this, until I saw that his careful foresight had enabled him to bring several spare flowers, with one of which he quickly replaced the damaged specimen.

Pack all vegetables most carefully for conveyance in order that the specimens do not get bruised or rubbed, and, above all, allow plenty of time for staging (too often good exhibits are spoiled by putting them up hurriedly) and work in accordance with the terms of the schedule, checking each dish from time to time, so as not to put up a score of specimens where the schedule calls for two dozen, or putting up a dozen where only six are stipulated. These are very frequent mistakes, and are liable to disqualify an exhibit.

A well-set-up group of finely-grown vegetables nowadays can, and does, attract the general public visiting a show as much, or even more, than collections of Roses, or groups of Orchids, and artistic ideas may be given just as much

the most important of every-day requirements, whereby generally a higher standard would be attained. *Edwin Beckett.*

TRIAL OF DWARF BEANS.

The following awards have been made by the Council of the Royal Horticultural Society to Dwarf Beans for Forcing after trial at Wisley.

AWARDS OF MERIT.

No. 34, *Early Favourite*, from Messrs. KELWAY AND SONS; No. 45, *Monster Negro*, from Messrs. SIMPSON AND SON.

HIGHLY COMMENDED.—No. 23, *The Sorsby*, from Messrs. DICKSON, BROWN AND TAIT; No. 54, *Feltham Prolific*, from Messrs. KELWAY AND SONS; No. 63, *Glory of England*, from Messrs. KELWAY AND SONS; No. 79, *Canadian Express*, from Messrs. J. CARTER AND CO.

COMMENDED.—Nos. 16, 17, 18, 19, 20, and 21; Masterpiece, from Messrs. DICKSON AND ROBINSON, DOBBIE AND CO., SIMPSON AND SON; SUTTON AND SONS, KELWAY AND SONS, and R. SYDENHAM, LTD.; No. 26, *Dwarf Fillbasket*, from Messrs. BARR AND SONS; No. 59, *White Model*, from Messrs. J. CARTER AND CO.; No. 68, *Green Gem* (for cropping qualities), from Messrs. SUTTON AND SONS; No. 83, *Sion House*, from Messrs. J. CARTER AND CO.; and No. 107, *Davis' Kidney Max*, from Messrs. RICE.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The Late Dr. J. G. Baker.—In connection with the obituary notice of the late Dr. J. G. Baker, F.R.S., on p. 102, it may be of interest to mention the deceased gentleman's work with the difficult genera *Rosa* and *Rubus*, to which for many years he paid special attention. As long ago as 1864 he wrote a paper on British *Roses* for *The Naturalist*, a North of England journal, and five years later he contributed a Monograph of British *Roses* to the *Journal of the Linnean Society* (xi., pp. 197-243). This paper was subsequently adopted as the basis of classification of the *Roses* in Boswell Syme's third edition of *British Botany*. The study was afterwards extended to the genus as a whole, and in 1885 he contributed a paper on the "Classification of Garden *Roses*" to *The Gardeners' Chronicle*, which was reproduced in the *Journal of Botany* (of which he had been assistant editor from 1872 to 1875). In 1889 he read a paper at the National Rose Conference on "The Botany of the Rose," and this was also the subject of a chapter contributed by him, in collaboration with the late Thomas Moore, to William Paul's *Rose Garden*. His last important work was in connection with Miss Willmott's sumptuous work, *The Genus Rosa*, to which he contributed the technical descriptions and a chapter on the history of the genus. To *Rubus* he also paid great attention, though here his writings are of a more scattered character. He amassed a large collection of European Brambles, the loan of which is acknowledged by Babington in his work on *British Rubi*, while assistance from him is acknowledged by the late Rev. W. Moyle Rogers in his *Handbook of British Rubi*. Dr. Baker's name is commemorated in *Rubus Bakeri*, described by Lees as "a remarkably neat, specialised form of *R. nitidus*." This Bramble was originally recognised by Baker as an unnamed form, and, although he afterwards regarded it as closely allied to *R. rhamnifolius*, under which Rogers places it as a sub-species, it is considered by others as thoroughly distinct, and is kept separate by Sudre in a recent monograph. It is frequent on some of the London commons, and is a compact, sub-erect bush, with small, markedly cuspidate leaflets, and very numerous, rather small fruits, and is thus nearer *R. nitidus* in character. It is so markedly distinct (and the writer has long grown it) as to deserve a separate name, a fact that may be regarded with satisfaction in this connection. Dr. Baker also contributed an exhaustive account of the hardy *Sempervivums* to these pages in 1874, and he was joint author with the Rev. W. W. Newbould of the second edition of Hewett C. Watson's *Topographical Botany*. The writer cannot conclude without a tribute of esteem to an old colleague and a warm personal friend, R. A. Rolfe.

The Late Mr. J. Charlesworth.—It may be we little realise the tremendous loss sustained by all Orchid lovers and enthusiasts by the death of Mr. Charlesworth, principal of the firm bearing his name. I have so often had the privilege of visiting the nursery at Hayward's Heath and enjoying discussions on the merits and demerits of each new phase in Orchid hybridisation that I feel it obligatory, in the absence of an abler pen, as a trader, to write a few words in appreciation of Mr. Charlesworth's great achievements. His productions have given so much pleasure to so many people that I believe all Orchidists will agree ungrudgingly that we have lost the greatest Orchid hybridist in the world, and one whose example as a persistent and patient worker may well be followed. Early in his career Mr. Charlesworth realised not only the necessity of producing hybrids as a race of plants better fitted to our climate, but for the vast future they would open. His fertile mind was ever alert, and he was engaged in producing Orchids that would prove amenable in almost every clime, and on this matter he was so intensely enthusiastic that his inspiration

will not soon lose its effect on those privileged to know him. It was, perhaps, in blending difficult genera that our late chief was greatest, and failure only proved an incentive to further effort. To enumerate the notable Orchids his firm produced would require much space, but among *Cattleyas*, *Laelio-Cattleyas*, *Sophro-Cattleyas*, and the allied genera; in *Odontoglossums*, *Miltoraias*, and many others, Mr. Charlesworth's name will remain as long as Orchids are cultivated. I earnestly hope Mr. Charlesworth's good work, and the establishment that bears his name, will continue to enjoy the prestige and high reputation they have won. A. McBean, Cooksbridge, Sussex.

Narcissus maximus.—There is a group of beautiful *Daffodils* very difficult to keep in some soils, such as *maximus* and *King Alfred*, and as this is the planting or replanting season, it may be worth while noting that deep planting has a wonderful effect on the health and vigour as well as the life of these sorts. I advise a depth of seven inches for all varieties of this class that fail to grow when planted at the usual depth. The reason why they succeed well when planted deeply is most probably because the bulbs are less affected by drought. There is no fear of the plants failing to grow at the depth stated; I may state that a lot of *Daffodil* bulbs turned out here, for war reasons, to a depth of at least 18 inches, were not by any means all killed, and they were turned in upside down at that. R. P. Brotherston, Tynningham Gardens, Prestonkirk.

Gentiana asclepiadea.—This fine *Gentian* is making a great display at Wisley Gardens this year, hundreds of specimens being in full bloom by the sides of walks and ditches, under the trees in the old part of the garden. The species appears to have become thoroughly naturalised and to have found the conditions which suit it to perfection; these are a moist, well-drained, sandy soil, containing plenty of decayed vegetable matter, and partial shade, which is provided by the large *Rhododendrons* and other trees which are growing there. Many of the *Gentian* stems are 3 ft. long, and one I measured was 4 ft. high with 26 flowers on it, but Nicholson's *Dictionary of Gardening* gives the height as 6 in. to 38 in. Certain plants have a dozen stems, and the beautiful purple flowers are freely produced on all. A slight variation in colour and size of flowers may be found, and there are a few plants of the white variety—enough to make one hope it will not increase. *G. asclepiadea* is the most graceful of all the *Gentians* and should be grown in quantity in preference to a few isolated specimens. W. H. Diers, V.M.H., Westham, Hook, nr. Surbiton.

A Warning to Gardeners.—Recently I was engaged in summer pruning a standard Apple tree of Peasgood's Nonsuch. When standing, just 12 ft. from the ground, on a 20-round ladder, and reaching a little above the top of the ladder, all of a sudden the branches the ladder was leaning on gave way, and the ladder fell in towards the middle of the tree. I was thrown backwards on to the ladder, and slid head foremost to the ground, and but for a merciful Providence should have probably broken my neck or otherwise sustained severe injuries. However, the force of the impact came square on to my shoulders, and, though it was tremendous, nothing serious happened beyond a severe shaking. No doubt I was to blame for taking the risk. I should have carried out the task with a standard tree pruner, or else had someone to hold the ladder. A word to the wise is sufficient. W. E. Jones, Shrewsbury.

Castle Kennedy Fig.—This, though a very old variety, having been grown at Castle Kennedy, Wigtonshire, for more than 150 years, seems not to be much known. It is a very early variety, and the first ripe fruits this year were picked on August 6. The Figs are of the largest size; one year several averaged six ounces each, and I think next to *Negro Largo* it is quite the finest-looking variety in cultiva-

tion. Brown Turkey growing alongside ripens about three weeks later. The Fig out of doors is, of course, not a fruit that gives large returns in Scotland, but the rule is, one year with another, this variety yields better than Brown Turkey. At one time, if not now, Castle Kennedy was cultivated in the gardens of that name as a standard, but in few localities in the north could it be expected to succeed without the shelter of a wall. Of course, only one crop is produced in the year, and in order to make as sure as possible of a crop it is important to pinch out the points of the shoots at this date or earlier, as this induces the formation of little swellings that in early summer become young fruit; those that are formed in late autumn as a rule drop off in spring. R. P. Brotherston.

PALMS OF THE RIVIERA.

If for centuries the Date Palms were the only ones planted on the Riviera, and besides in small numbers, it can be said that the introduction of another species of the same genus—namely, *Phoenix canariensis*, gave the signal for the very extensive planting of Palms, on account of the extraordinary merits of this species. What would appear the more astonishing is that a hardy Palm of such beauty should not have been introduced at an earlier date, since it was not a question of a species found only in some distant, inaccessible country, but in the Canary Islands, which are comparatively near to Europe, and in regular, frequent, and rapid communication. The first specimens of this Palm were planted on the Riviera in 1866 at Nice, and their rapid growth, hardiness, and extraordinary beauty attracted such attention, that many thousands of others were planted, especially when seeds were produced locally, and it is now by far the most common Palm here.

Phoenix canariensis, though resembling somewhat the Date Palm (*Phoenix dactylifera*) may readily be recognised even by the layman in its much thicker trunk, by its always very gracefully arched leaves of a pure green, while those of the Date Palm are always very glaucous, and by the much more furnished crown, containing probably the greatest number of leaves found in any Palm.

It is mainly this enormous number of leaves, forming a dense crown of incomparable beauty, which constitutes the most valuable ornamental character. Indeed up to four hundred green leaves may frequently be found on healthy specimens; on one particularly robust plant four hundred and forty-three green leaves were counted. When it is added that each leaf measures from five to six metres, the wonderful ornamental effect can be understood.

To carry the weight of such a crown of leaves, and sometimes besides some hundred or two hundred kilos of fruits requires a sturdy, strong trunk, and *Phoenix canariensis* has a thick trunk, which may be three and a half metres or more in circumference.

The rate of growth is much quicker than that of the Date Palm, and the oldest specimens on the Riviera have a height of some ten to twelve metres. It is a Palm, which at length, when centuries old, grows nearly thirty metres in height. Such a very old specimen was found until quite recently on the island of Teneriffe, and passed under the name "*Palma de Conquista*," having been mentioned already by the first discoverers of the Canary Islands.

Phoenix canariensis is a very distinct species, and cannot be conformed with any other *Phoenix*. While most other species of *Phoenix* produce suckers or sprouts from the lower part of the trunk, *Phoenix canariensis* never does so, and therefore can be multiplied only by seeds. The fruits, produced in enormous quantity, are quite uneatable, possessing only a thin layer of acrid flesh surrounding the short, thick seed.

Still, as it may happen with any plant, new characters do sometimes appear, and I possess in my garden a plant of this species, which in

no way can be distinguished from the common type, but which has fruits exactly like the ordinary fruits of *Phoenix canariensis* in appearance, but with flesh of a quite agreeable taste—so agreeable, indeed, that my friend, P. Popenoe, the well-known author of the most important work on the Date Palm and its culture; and who ate of these fruits from the plant during a visit to my garden, stated in *The Pacific Garden*, Pasadena, California, July, 1912:—"If this Palm could be multiplied in South California, every household could cultivate the Dates for family use." Now, however good the taste is of the fruits of this plant, which I have called *Phoenix canariensis* hort. v. *edulis*, the flesh is as sparse as that of the common type, and, of course, as *Phoenix canariensis* never produces suckers, one would have no other way of multiplication than by seeds, and the taste of the fruits, would almost of a certainty be influenced disadvantageously by the pollen from the male plant, *Phoenix canariensis*, as all other *Phoenix*, being diœcious.

I discovered my plant while on a visit to the late Charles Naudin, the famous botanist, then director of the Botanic Garden of Villa Thuret, Cap. d'Antibes. He took me for a walk, and we entered a garden, where he showed me a splendid avenue of *Phoenix canariensis*, all of the common type in every respect. He gathered a handful of fruits, handed them to me, telling me to plant them when I had bought a garden. This I did, and a number of beautiful Palms originating from these seeds now ornament my garden, and one of them produces the eatable fruits. I may add that neither the mother plant nor any of its companions in the garden at Cap. d'Antibes, where Naudin gathered the Dates, possesses this quality of bearing sweet fruits.

Phoenix canariensis is of the same hardiness as the Date Palm, and never suffers from frost except at rare times and very slightly, and only in the most unfavourable positions, as at the lowest lying parts of the valleys where currents of cold air descend, and the temperature reaches its lowest points, and even then rarely except rainy weather has preceded immediately the frost. Though *Phoenix canariensis* does well near the border of the Mediterranean, the salt water spray is harmful to it, and more so than to the Date Palm.

As remarked above, *Phoenix canariensis* retains its leaves green for a very long time, thus possessing a crown of leaves more dense than that of any other known Palm. Indeed, a seedling put out in good condition will retain its leaves, and continue to develop new ones, so that the plant at the age of ten or twelve years still retains nearly every leaf green which it ever produced, and if the lower leaves are not cut off (as unfortunately this is nearly always done), the plant forms then a regular rounded mass of gracefully arching leaves covering a circle of ground some 12 to 15 metres in diameter, and forms a most imposing sight. Of course, where this Palm is planted in a very small space, and it is desired to grow flowers on such small space, it may be necessary to cut off the lower leaves to utilise the ground around the Palm.

Phoenix canariensis, like the Date Palm, will live even on dry hills, and without being watered, but then the development is much slower than when watered, and the leaves do not then last nearly so long in a green state. With regard to soil, it will grow equally well in dry ground from granitic to very calcareous soils, but prospers decidedly best in a moderately clayey soil that retains sufficient moisture.

I may add finally that *Phoenix canariensis* has, during the past thirty years, become by far the most important Palm for exporting to Northern countries. Hundreds of thousands are cultivated as pot specimens, and exported yearly from the Riviera. Thus this Palm is not only the most important decorative one for gardens here; it is also the most important commercial Palm for export. A. Robertson Proschowsky, *Jardin d'Acclimatation Les Tropiques, Nice, France*.

SOCIETIES.

ROYAL HORTICULTURAL OF ABERDEEN.

August 19, 20, and 21.—In beautiful sunshine, with, however, a decided "stang" in the air, the annual exhibition of the Royal Horticultural Society of Aberdeen, held on the above dates in the Duthie Public Park, Aberdeen, received a capital send-off from H.R.H. Princess Mary, who performed the opening ceremony. Although the two previous and present reigning Sovereigns have been patrons of the society, this was the first occasion on which Royalty officiated at the opening function. The show was a decided success; the discerning eye, however, could not fail to detect here and there unmistakable traces of the effects of inclement weather—the drenching rains, bleak winds, and mid-summer frosts—which has prevailed in the north during the past three months. The entries were double those of last year, and the arrangements made by Mr. J. B. Rennett, advocate, secretary of the Society, and his enthusiastic committee, were all that could be desired.

PLANTS IN POTS.—For a table of pot plants arranged for effect (not exceeding 7ft. 6in. by 6ft.), Colonel W. S. Gill, of Dalhenny, Aberdeenshire (Mr. Andrew Brebner, gardener) won the first prize with a very fine exhibit. Lord Sempill, Fitzroy House, Aberdeenshire (gardener, Mr. W. Smith), was a good second. The class for four specimen plants, two flowering and two foliage, provided a keen competition. Colonel Gill was placed first with Lord Sempill and Mr. Isaac Benzie, Morken, Aberdeenshire (gr., Mr. William Henderson), second and third respectively. Ferns were remarkably fine in quality, the leading honours for these plants falling to Colonel Gill and Mr. Benzie. Zonal Pelargoniums, were well shown, the best by Lord Sempill and Mr. Benzie. The last-named gentleman excelled in the classes for Fuchsias, plants for dinner table decorations, Begonias, and Petunias; Col. Gill had the finest Gloxinias.

CUT FLOWERS.—The displays of Roses, Sweet Peas, and Carnations were uncommonly fine. The challenge cup offered for eighteen Rose blooms, H.P. and H.T., or either, named, distinct varieties, was won worthily by Colonel Gill, followed by Mr. J. Ireland, Brechin, and Mr. Robert Tweeddale, Bonnymuir Place, Aberdeen. Colonel Gill won the first prizes for (a) six bunches of decorative Roses and (b) twelve tea of noisette (or either) Roses. Mr. George McLennan, Longley, Forres, had a fine win in the class for four vases of Collette Dahlias. Asters were well shown, Mr. D. B. Stewart, Drumduan House, near Aberdeen (gr., Mr. Andrew Gardiner), taking leading honours for these flowers. Mr. George McLennan, Longley, showed the best twenty distinct varieties of cut flowers and fine foliage bedding plants. Miss McLennan, Springhill House, Aberdeen (gr., Mr. D. L. Scorgie) following closely. Pelargoniums were well shown by Colonel Gill. Carnations, as already noted, were exceedingly meritorious, and the chief honours for these flowers fell to Mr. Ogston, of Ardlo (gr., Mr. W. Sim). Mr. R. Williams, Park House, Aberdeenshire (gr., Mr. J. Mc C. Brown), had a choice display of Begonias, for which the first prize was awarded. Mr. Benzie, Morken, following closely. For twelve bunches of annuals, Miss McLennan, Springhill, was first, and she was successful in the class for twelve spikes of double Stocks. Sweet Peas were a great feature of the show. Sir Thomas Burnett, Bart., Crathes Castle, Aberdeenshire (gr., Mr. John Petrie), was outstanding in the magnificent collections he staged. Messrs. Smith and Son's Challenge Silver Cup was awarded him, and, having now gained it for three years, it becomes his own property.

FRUIT.—Lord Sempill was the outstanding winner, taking first prizes for (a) the best collection of hardy fruit's, (b) Cherries, (c) Strawberries, (d) Peaches, (e) Nectarines, (f) Pears, and (g) Plums. Colonel Gill was also a prominent prize-winner in the classes for Raspberries, Gooseberries, and Tomatoes. John A. Grigor, Duff House, Banffshire, had some fine Gooseberries and Apples. The entries of Pears were small in number, but fine in quality, the

honours being divided between J. A. Grigor and Lord Sempill.

VEGETABLES.—Mr. R. Williams, Park House, led for Potatoes, round white, kidney shaped white, and kidney shaped coloured, with capital entries. Springhill House, Aberdeen (gr., Mr. Douglas L. Scorgie), has always been finely represented in this section of the Aberdeen Show. The honours for the best collection of vegetables, a basket of salads, for Carrots, Cucumbers, Leeks, Turnips, Celery, and best dish of seedling Potatoes, all went to Springhill. The best Onions, fine, well-grown specimens, came from Drumduan House. A unique display of seedling Potatoes was made in this section by the pupils of Mr. Lewis Gavin, Drumwhindle School, Aberdeenshire.

There was a fine display in the amateurs' section and the allotment and plot-holders' classes.

NON-COMPETITIVE EXHIBITS.

An outstanding feature of the show was the attractive displays provided by local nurserymen and florists. Fine exhibits were made by Messrs. W. Smith and Son, Mr. M. H. Sinclair, Messrs. Knowles and Sons, Messrs. J. and R. Burns, all of Aberdeen; Town Councillor Wright, Johnston Gardens, had a very fine display; indeed, there was nothing better in the show. Messrs. Ben Reid and Co., Aberdeen, were also finely represented. An attractive collection of flowers from Aberlour Orphanage was on exhibition from Mr. J. G. White, treasurer of the institution, and the Rev. E. V. Kissack, the warden. Mr. White's large collection of Begonias included a number of the double sweet-scented variety which bears his name; it is a magnificent flower of bluish pink colour. The Rev. Mr. Kissack's exhibit was chiefly composed of some of the latest varieties of Carnations. Unfortunately the weather proved wretched on the closing day, and greatly marred financially what was otherwise a very fine show.

RYDER'S VEGETABLE AND FLOWER SHOW

The number of entries at Messrs. Ryder's show held in mid-August were up to the previous years' standard, and in all cases the prize winners showed exhibits of sterling worth. The exhibits of Peas, Onions, and Beet were particularly good, especially interesting entries being made of Ryder's new Oval Beet, which is as quick growing as the Turnip Rooted Beet. The winning entry for Runner Beans was especially good, the Beans measuring 15½ inches in length. The prize Broad Beans measured 12½ inches long.

The outstanding feature of the vegetable section was the collections of vegetables, for which there were three distinct classes. Each collection shown was of six distinct kinds, and there were four prizes in each class. An interesting new feature of the exhibition was the display of Sweet Peas and annuals. Very favourable entries were made in the local class for Sweet Peas, and a local man also won in the open class. There were small entries of annuals, the first prize being awarded to a very fine bunch of Ryder's Poppies.

PROFESSIONAL GARDENERS.

A meeting of the newly-formed Association of Professional Gardeners was held recently at the Victoria Hotel, Leeds. Mr. H. Carver occupied the chair. The general secretary, Mr. F. Capp, Nostell Priory, Wakefield, announced that the membership was rapidly increasing, and that the association suggested wages at a minimum of £1 per week, or its equivalent, to all qualified gardeners; £2 10s. for foreman, with cottage or bothy; £2 for journeyman over twenty-one, with bothy; £1 10s. to £1 16s. for improvers, aged eighteen to twenty-one, with bothy; and £1 7s. for garden boys, aged sixteen, with bothy. Mr. Capp denounced the policy of direct action, and insisted that by propaganda and reasonable methods gardeners should be able to improve their conditions without resort to the strike weapon. During the evening several new members were enrolled. We understand that the association's suggested scale of wages has been adopted in many instances.

MARKETS.

COVENT GARDEN, August 31st, 1920.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit : Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Apples, English, per $\frac{1}{2}$ bushel		Nectarines,	
—Worcester Pear-		special per doz.	10 0-18 0
main	12 0-16 0	best	4 0-8 0
—Lady Sudeley	10 0-12 0	Oranges, Cape	
—James Grieve	10 0-12 0	per case	25 0-35 0
—Greenside		Peaches, forced	
—Eckinville	bushel	special per doz.	10 0-18 0
—Scudling	16 0-20 0	best	4 0-8 0
—Lord Derby		Pears, Beurre Hardy	
—Warner's King		36's	18 0-20 0
Bananas, singles	25 0-35 0	48's	16 0-18 6
doubles	35 0-40 0	56's	12 0-15 0
Figs, per doz.	2 0-6 0	—Louise Bonne of	
Grapes, per lb.		Jersey, $\frac{1}{2}$ sieve	14 0-18 0
—Muscats,		—Clapp's Favourite,	
special	5 0-7 0	half sieve	14 0-18 0
best	3 0-4 0	—"Williams," half	
—Black Hamburgh	1 0-2 0	bushel	16 0-18 0
—Canoe Hall	3 0-6 0	—Dr. Jules Guyot,	
—Gros Maroc	2 0-2 6	half bushel	16 0-18 0
—Alcanta	1 3-2 0	—Fertillity, half	
—Gros Colmar	2 0-4 0	bushel	12 0-14 0
Melons, each		—Hessle, half	
—French	9 0-11 0	bushel	12 0-15 0
—G'cey & English	2 6-6 0	Plums, Pond's	
Melons, Canteloupe		Seedling	16 0 18 0
Dutch	3 0-4 0	—Bush	11 0-12 0
		—Monarch	12 0-15 0
		—Damsons	10 6-12 6

REMARKS.—Trade in all departments has been very brisk, nearly all varieties of goods clearing satisfactorily. The unfavourable weather conditions of late have caused an appreciable reduction in quantities of English Tomatoes, and prices have advanced over those ruling last week. The Cucumber trade continues firm, although prices are not unduly high. English orchard fruit has been commanding considerable attention. Apple prices have a firmer tendency both for dessert and culinary varieties, good parcels of the latter being difficult to find. Of English Plums, Monarch and Bush are now the most important. Of the former there is a fairly large crop, and large quantities have been marketed this week at prices satisfactory to the grower. Damsons are also in fair supply and in firm request. A good sprinkling of Kentish Cobs has been available, and prices show a considerable reduction over those ruling last week. English Pears are short and those coming to hand are quickly absorbed by the trade. Choice fruits have also been in better demand, and prices being comparatively low, are clearing satisfactorily. Vegetables continue on the whole fairly plentiful, although there is a tendency for French Beans to be short. Forced Mushrooms continue scarce and dear. Potatoes are slightly firmer in price.

Out Flowers, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Aster coloured, per doz. bun.	4 0-7 0	Orchids, per doz.	
—white, per doz. bun.	4 0-7 0	—Cattleyas	30 0-36 0
Carnations, per doz. blooms,		Pelargonium, double scarlet, per doz. bunch	8 0-10 0
best American	1 6-3 6	—white	9 0-10 0
Chrysanthemums		Physalis	12 0-18 0
white, spray, per doz. bun.	6 0-10 0	Richardia (Arms), per doz. blooms	6 0-—
—bronze	10 0-15 0	Roses, per doz.	
—yellow	6 0-10 0	blooms—	
Coreopsis, per doz. bunch	1 6-2 0	—Ophelia	3 0-4 0
Daisies, white, per doz. bunch	2 0-4 0	—Richmond	2 0-3 0
Delphiniums, per doz. bunch	4 0-6 0	—Sunburst	2 6-3 6
Gaillardias, per doz. bunch	2 0-3 0	—Niphetos	2 0-3 0
Gladioli, per bun.	1 0-1 6	—Molly S. Crawford	2 6-3 0
—The Bride	1 0-1 6	—Madame A.	
—Italy, per doz. spikes	3 0-4 0	—Chatenay	1 6-3 0
—Brenchleyensis	3 0-4 0	—Melody	1 6-2 6
Gypsophila, per doz. bunch	6 0-8 0	Scabiosa caucasica, per doz. bunch	4 0-5 0
—paniculata, double	15 0-24 0	—Stalice, mauve, per doz. bunch	6 0-8 0
Lapageras, per doz. blooms	4 0-5 0	—white	8 0-10 0
Lilium lancifolium album, per doz. blooms	2 0-4 0	—latifolia	8 0-10 0
—long, per bun.	3 0-4 0	—leucum	8 0-10 0
—rubrum, short per doz. blooms	2 0-3 0	Stephanotis, per 72 pips	4 0-5 0
Lilium longifolium, per bunch	4 0-7 0	Stock, English, white, per doz. bunch	6 0-9 0
—short, per doz.	5 0-6 0	Sweet Peas, white and coloured, per doz. bunch	4 0-12 0
Marguerites, yellow, per doz. bun.	2 0-3 0	Sultan, per doz.	
		—white	4 0-6 0
		—mauve	4 0-6 0
		Violets	
		Princess of Wales, per doz. bun	—

REMARKS.—There are abundant supplies of annuals and hardy herbaceous flowers. Chrysanthemums in all the leading varieties are making a good show.

Obituary.

William Seymour Gillies.—The many friends of Mr. William Seymour Gillies, for several years foreman on the estate of Mr. J. P. Morgan, Glen Cove, L.I., will learn with deep regret of his untimely death on July 26th, following an operation for appendicitis. The deceased was born about thirty-two years ago at Stevenston, Devonshire, where his father for many years was gardener to the late Hon. Mark Roll. Mr. Gillies commenced his gardening career under his father, and was later employed in the gardens of Goodwood House, Shipley Hall, and Vaynol Park. He left England seven years ago and settled in the United States. At the outbreak of war both he and his brother George left their positions in the U.S.A. to join the British Forces in Canada. Mr. Gillies was loved and esteemed by all who knew him, a man of sterling character, a true friend, and a born gardener. *John Johnson, Pittsfield, Mass., U.S.A.*

TRADE NOTES.

THE Burbage Roses have been very successful of late and flowers exhibited by "The Burbage Nurseries" (manager, Mr. G. Geary) were awarded a Silver Medal at Wolverhampton, a Certificate of Merit at Atherstone, a Silver Gilt Medal at Leicester Abbey Park, and a Gold Medal at Market Bosworth.

MR. S. M. SEGAR informs us that, for the purpose of bringing his sons, Frank Segar and Samuel Moore Segar, jr., into partnership, the business of Messrs. Wills and Segar, Onslow Crescent, South Kensington, has been registered as a Private Family Company. No outside capital has been or will be invited. No other change will be made and all business transactions will be conducted as heretofore.

GARDENING APPOINTMENTS.

Mr. John R. Morgan, for the past four years Gardener to the Messieurs LEPPER, Elsinore, Crawfordsburn, Co. Down, as Landsteward and Gardener to MAJDE LADY CLANMORRIS, Bangor Castle, Co. Down.

Mr. Charles M. Holt, for the past three years Gardener to Mrs. BRITHAM BROOKS, Tany-Garth, Chirk, Denbigh, and previously at Miserden Park, Gloucester, as Gardener to F. W. WIGNALL, Esq., The Rookery, Tattenham, near Chester, Cheshire.

Mr. A. Snrridge, for two years before the war General Foreman at Cannon Hall, Yorkshire, and for the past 18 months acting Head Gardener at the same place, as Gardener to LORD CHARLES BENTINCK, Ranby Hall, Lincoln.

Mr. O. C. Walton, for nearly four years Gardener to Col. O. H. OAKES, Nowton Court Gardens, Bury St. Edmunds, and previously at The Rookery, Westcott, Dorking, as Gardener to the Right Hon. the EARL OF LISBURN, Crosswood Park, Aberystwyth, Cardiganshire.

Mr. T. Batchelor, for over three years with His Majesty's Forces in France and Belgium, and previously Gardener to J. B. GRAY, Esq., Bolney Court, Henley-on-Thames, as Gardener to Mrs. R. MILLS, Stevenston Manor, Basingstoke. (Thanks for 2s. 6d. for R.G.O.F. Box.—Eds.)

Mr. T. Elliott, as Gardener to J. A. CHOWN, Esq., Great Tangley Manor, Womersley, near Guildford, Surrey.

CATALOGUES RECEIVED.

SAMSONS, LTD., Kilmarnock.—Bulbs and Flower roots.

ACSTIN and McASLAN, Glasgow.—Bulbs.

E. P. DIXON and SONS, LTD., Hull.—Bulbs.

D. G. PERDIE, Glasgow.—Bulbs.

W. DUNMUND and SONS, LTD., Dublin.—Bulbs.

G. H. PLANT and Co., Chester.—Bulbs.

G. R. DOWNER, Chichester.—Herbaceous and Alpine Plants.

DICKSONS, LTD., Chester.—Bulbous flower roots.

THE "PREMIER" SEED CO., LTD., Brighton.—Bulbs.

DORRIS and Co., LTD., Edinburgh.—Herbaceous and Alpine Plants.

FOREIGN.

VILMORIN-ANDRÉUX ET CIE., Paris.—Bulbs and Plants.

ANSWERS TO CORRESPONDENTS.

MARKET GARDENING: A. L. (1) The number of houses 100 ft. long that two women gardeners could manage depends upon the width of the houses, the crops grown in them, and the capability and industriousness of the workers. Carnations or bedding plants, for example, grown in pots, will require far more attention than, say, Tomatoes, Cucumbers, or Chrysanthemums planted in the beds and borders. Taking one thing with another, however, a capable, hard-working woman gardener putting in eight hours per day (if she can work so long, week in, week out) ought to manage two such houses, and possibly three; but it is difficult to say more exactly without knowing the working capabilities of the individuals. (2) The capital required in these days to commence building glasshouses 100 ft. long must be large—roughly, about £400 per house for one 100 ft. by 15 ft. The land may be obtainable in some places at from £50 to £80 per acre, freehold, if there is no likelihood of building upon it within the next 50 or 100 years. If building operations are likely to take place in the next few years, then four or five, or even six times, more will probably be nearer the price. (3) Having had only two years' experience in a horticultural college is rather a meagre training for a commercial gardening career, and you should be very careful not to incur too great an initial outlay unless there is a definite chance of being able to sell the produce quickly and at a good price when ready for market. Tomatoes, Cucumbers, and Chrysanthemums are fairly safe crops to grow—if cultivated well. Carnations—presumably the American or perpetual flowering varieties—are more risky in the cultivation, but are profitable when grown reasonably well. (4) The returns depend, of course, upon the market prices and the way the produce is packed and graded. A Tomato house 100 ft. by 15 ft. would hold about 800 plants, and these should average 5 lbs. per plant, making a total crop of, say, 4,000 lbs. per annum. At 6d. per lb., this means £100, from which must be deducted cost of labour, rent, rates, taxes, etc. If followed with Chrysanthemums, another £60, £80, or £100 may be obtained, but this will largely depend upon suitable market varieties being grown and the state of the market. Cucumbers would realise perhaps more than Tomatoes, and Carnations probably even a little more per house. If an acre of land is purchased, and four glasshouses erected, several outdoor crops could also be grown, but in that case six persons would be necessary to keep the place in a reasonably fair condition.

MEALY BUG ON VINES.—E.S.: Now that the vines are carrying a crop of Grapes you can do little to free them from Mealy bug, but as soon as the bunches have been cut, the work of eradication should be proceeded with vigorously, the vines syringed frequently with a suitable insecticide, and every effort made to keep the leaves, roots and structure clean. When the leaves fall they should be gathered and afterwards burned. The real business of eradicating the pest can only be carried out when the vines are dormant. If you write us again, we will advise you in due course as to what method to adopt.

STRAWBERRY PLANTS FAILING: F. The fungus present is *Spumaria alba* (one of the Myxomycetes). This does not attack the Strawberry plant, but lives on the decomposing manure present in or, more likely, placed on the soil. Clean cultivation would be the best means of preventing further trouble.

Communications Received.—A. B.—C. G. A.—J. L. W.—E. A.—E. M.—W. H. H.—N. J. G.—France.—R. R. A.—O. W.—J. H.—I. L.—Y. G.—W. T.—C. H. C.—J. A. P.—J. M.—P. M. J.—K & Son.—C. A.—W. W.—H. W. M. P.—H. W.—G. C.—D. S. C.—B.—Constant Reader.—H. H.—D. W.—K. J.—H. W.—E. B.—E. A. M.—M. S. R.—J. B.—A. C. B.—W. T. E.—G. B.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich 57.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, September 8. 10 a.m.: Bar. 30.1; temp. 62°. Weather—Dull.

Horticulture at the British Association.
It is interesting to note how large a part horticultural subjects played in the meetings of the Agricultural Section of the British Association at Cardiff. The presidential address, reported elsewhere in these pages, was devoted exclusively to horticulture, and dealt both with the part played by horticulturists in aiding food production during the war and with the prospects of extending the area under intensive cultivation in this country. As will be seen from the report, the President of the Section, Professor Keeble, showed that the work of food production done by professional and amateur horticulturists was large in extent and important in determining that the balance of supply turned in the direction of sufficiency instead of that of scarcity, as at certain moments it might otherwise have done. He drew opportune attention to the facts concerning the decrease of the areas under fruit—both what may be called the emergency decrease under soft fruit—which amounted to no less than 13,145 acres or 24 per cent. of the 1918 average, and the continued decrease of the area under Apples and Pears accounted for by the steady going out of cultivation of cider and perry orchards. With respect to possible future developments, he described the organisation which was established during his controllership of Horticulture at the Ministry of Agriculture, and showed that much might be hoped for from that organisation if it continued to work in close co-

operation with professional horticulturists—as from the personality and attainments of his successor at the Ministry, we may be sure it will. Professor Keeble's conclusion, that it should be possible to raise at home a certain proportion of the large quantity of horticultural produce now imported from abroad, is one which will be accepted by most growers and the advantage of doing so will be admitted by all. In the absence of any direct assistance from the State, Professor Keeble is of opinion that the quality and extent of horticultural organisation for the purposes of education and research will ultimately determine whether success will attend the effort now being made to increase the areas under intensive cultivation. "The abler man can command success, whether the man of average ability and industry can achieve it will depend on education."

Length of Day and Blossom Time.

The remarkable effects in forcing premature blooming produced by the curtailment of the period of exposure to daylight have already been described on p. 115. It now remains to recount the no less remarkable results observed by Messrs. Garner and Allard when plants thus forced are re-exposed for the full period of daylight. They found that plants of Soy Beans treated in this manner ripened their seed; their leaves turned yellow and the plants looked as if they were about to die a "natural" death; but instead they threw out new branches and whilst still bearing their first crop of ripened seed blossomed for the second time in September—the month in which the plants that throughout their life had been exposed to normal daylight blossomed for the first time. Similar resumption of growth took place among Asters and other plants transferred from curtailed daylight to normal conditions, and a second blossoming occurred in time with the first natural blossoming of normal plants also took place. The gardener with the habit of reflection will think in this connection of the second flowering in the autumn of such plants as Anchusas and Cat Mint when cut down after they have finished their first period of blossoming. The experiments carried out with early and late varieties of Soy Beans and with other plants show on the one hand that certain plants are what may be called "short day" plants, that is, they only flower when the light hours of the day do not exceed a certain maximum, which of course varies for each plant, and on the other hand that some plants fail to find in a given latitude a day of length sufficient to enable them to develop blossom at all. Thus a Composite, Mikania scandens, maintained throughout the year under short day conditions remained sterile and could only be prevailed upon to blossom in the summer time when long days occur. Conversely, late varieties e.g., of Soy Bean, are apparently late because they can only blossom when the long summer days have given place to the shorter daylight periods which characterise the later months of the year. It would seem that these observations throw a new and interesting light on the sterility and other vagaries of plants introduced from one country to another. The failure of Sweet Peas to flower in the West Indies may be due to an incompatibility between the length of day there and that to which this plant is naturally attuned, and the change or maintenance of season of flowering of introduced plants may be due to a like cause. That the failure of some tropical or sub-tropical plants to blossom in countries of temperate climate would appear, from the authors' observations on the behaviour of

Phaseolus vulgaris, to be attributable to a like cause. For this plant, when grown in the open in the latitude of Washington generally fails to blossom before it is cut down by autumn frosts; whereas if taken up and sheltered in a greenhouse it produces flowers freely during the short winter days. When the days were experimentally limited each to seven hours P. vulgaris was found to bloom in 28 days, and to ripen its seed pods a month later; albeit that when grown in the open it could not blossom before October 11, 109 days after germination; it is as though the plant has to wait until the days are short enough in order to find release from the vegetative stage and to pass into the reproductive phase. According to the views developed in this interesting contribution to our understanding of seed time and harvest, plants range themselves in three categories; short day plants, which in such a climate as ours must flower either in autumn or in spring, long day plants which are summer flowerers, and ever-flowering or perennials, for which the limits of suitable days' lengths are so wide as to free them apparently from the restraint which controls the blossom time of the plants of the first two categories. Although the cautious will no doubt prefer to await the result of further experiments, yet it cannot be doubted but that Messrs. Garner and Allard have opened up an extremely interesting line of inquiry, have shed a new light on many obscure phenomena exhibited by the blossoming plants and have elucidated the mode whereby plants conform to the divine behest—so long as the earth endureth, seed time and harvest shall not fail.

Illustrations of British Grasses.—Photographic reproductions of a collection of dried and mounted Grasses, collected by a member of Messrs. McGill and Smith, Ltd., Ayr, are issued by that firm. The book is not a treatise on Grasses, nor a descriptive flora. Some 65 species and varieties are represented, which is a very good number of what might be collected in a maritime county in Scotland, though it should not have been difficult to add Avena pratensis, Catabrosa aquatica and Elymus arenarius on the seaboard. On the whole the species are correctly named, though Triticum repens is the bearded and not the typical form. A few of the plants have been collected before they were in full expansion, such as Aira flexuosa, Festuca uniglumis and Hordeum murinum. Others had been collected after the panicle had contracted, such as Festuca rubra, E. elatior, and Agrostis alba stolonifera, so that they do not show their distinctions so clearly in photographic representation as they should have done. Under the English and botanical names a few notes are given as to the use of the Grass in agriculture, with a reference to Poa nemorosa as a good Grass for lawns. It is said that cattle are not fond of Sweet Vernal Grass, although they will eat it when mixed with other Grasses. English farmers consider that it gives hay its sweet scent and that an admixture of it acts as a relish or condiment for horses and cattle. Anyway, it is not a gregarious Grass and can never be grown in quantity in hay fields or permanent pastures. In most cases the photographs are good representations of the Grasses as they appear naturally, and the collector could have improved the above-named exceptions, no doubt, if he had known they were to be photographed and published in book form. Printing, paper and binding are excellent; and the slender awns of the Grasses are well shown, except in the case of dense panicles like those of the species of Alopecurus. The collection represents not quite half of the 144 species given in the London Catalogue, though it includes all of the useful ones, and should prove of value to agriculturists, Grass specialists, gardeners and students.

* British Grasses. Published by McGill and Smith, Ltd., Ayr. Price 21s. net.

Cambridge Botanic Gardens.—The annual report of the Botanic Gardens Syndicate, Cambridge, states that the Syndicate has resolved to adopt a new scheme for the management of the garden and for bringing it more closely into touch with the teaching of botany. They propose to abolish the office of Curator and to substitute for it a Directorship, to be held by a trained systematist and economic botanist, who would take part in the teaching and training of University students, and in addition to appoint a practical gardener as superintendent. A Grace to give effect to this policy was submitted to the Senate and passed on March 6, 1920. As stated in our last issue, Mr. F. G. Preston, formerly the senior foreman, has been appointed superintendent. In the absence of a director, he has efficiently managed the affairs of the garden with the help of the Secretary, to the Syndicate. Messrs. G. Kendall and J. Bowgen have retired during the year, after forty-four and thirty-three years' service respectively.

A Gardeners' "Victory" Memorial.—Many of our readers will doubtless recall the correspondence on Gardeners' Victory Memorials which appeared in these columns during March and April of last year, commencing with a letter from Mr. Ed. Beckett, of Aldenham House Gardens, Elstree, in the issue for March 8 (Vol. LXV., p. 115) and continued by

Food Production, by the same author. The second book, entitled *Chemistry for Agricultural Students*, by R. H. Adie, M.A., F.R.S., F.I.C., Lecturer in the Cambridge University School of Agriculture is also in preparation.

Kent Commercial Fruit Show.—The schedule of prizes of the Kent Commercial Fruit Show to be held in the Agricultural Hall, Maidstone, on Tuesday, Wednesday and Thursday, October 26, 27 and 28, 1920, includes 23 classes, divided into various sections. The first 14 classes are open to commercial fruit growers in the British Isles, and a challenge cup, valued at twenty guineas, is offered for the best six boxes of Apples in Classes 1, 2, and 3 shown by Kent, Sussex or Surrey growers. A champion cup, valued at five guineas, is also offered by Mr. Barnett Emanuel for the best three boxes of dessert Apples, either Blenheim Pippin, Allington Pippin, Cox's Orange Pippin, or any other early variety. A silver cup, valued at seven guineas, is offered by the *Fruit Grower* for the best exhibit of three boxes of one variety of Apple as packed for market; and a challenge cup, valued at 20 guineas, is offered by Messrs. Clarke Bros. for the best four barrels of culinary Apples. There are also several other important trophies including a cup, valued at ten guineas, offered by Messrs. Geo. Monro, Ltd., for twelve boxes

inform the Ministry immediately when it is proposed to lift any crops destined for export, in order that arrangements may be made for an Inspector to be present. The fee to be charged for inspection and issue of the certificate will be £1 Is.

Appointments for the Ensuing Week.—Monday, September 13: United Horticultural Benefit and Provident Society's Committee meeting. Thursday, September 16: Brighton, Hove, and Sussex Horticultural Society's meet.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Wintering Pelargoniums.*—We will suppose it the end of the blooming season; the plants are allowed to become quite dry, and are then cut down as closely as the leaving sufficient eyes will allow; they are then placed in the greenhouse, with plenty of air, and when the wounds are healed they are watered and kept close, to induce them to break strongly. This they soon do, and as the shoots lengthen more air is given, until they attain their requisite length of an inch or more. They are now again allowed to dry and are completely shaken out, and the main roots cut off with a sharp knife to within a couple of inches, leaving attached to the remainder the smaller fibres at their natural length. They are then potted into as small pots as will contain them, say 6 inch, with a proportion of two-thirds turfy loam, as above described, and the remainder peat and silver sand, not sifted, but rubbed down and only the larger stones picked out. They are now plunged into gentle bottom heat, and kept close until, in a few days, they root round the pots, when more air is gradually given until they are entirely exposed to it; the great object being to ripen their wood and strengthen the young shoots. Care is taken to keep them from getting too wet, and fumigation is resorted to if the green fly appears. As the winter comes on its frosts are excluded, and the plants are kept as dry as is consistent with life; the old wood assumes a smooth nut-brown hue, the leaves look yellow, and the whole plant is stiff and rustles under the hand when passed over it, and thus they are kept until January. About the middle of this month they are shifted into the blooming pots; the compost, three-fourths turfy loam, the remaining fourth peat, cow-dung and silver sand. Dull weather is favourable for this operation. The plants are allowed to dry as before, and the outsides and the top of the ball are rubbed off by hand. They are potted moderately solid, and with about an inch of small crocks over the oyster-shell covering the hole. If the weather comes bright they are shaded, and the house is kept close until they feel at home in their new quarters, which is soon the case. As the shoots grow they are stopped according to the time their bloom is required, and training commences from the moment their shoots are sufficiently plastic. Fire-heat is avoided as much as possible; the air given is admitted in the morning, and the afternoon sun warmth is shut in from 2, 3, or 4 o'clock, according to the months. As general rules, keep the night temperature no higher than 45°, when fire is required; when aphides appear, smoke the house directly, and be sure to do so immediately before the blooming commences, whether their presence is detected or not; do not allow the plants to become dirty, wash without fear with rain-water, of which there ought to be a good supply in every well-arranged house. As the season advances, draw the syringe over the plants when the temperature of the house is raised, from closing it in the afternoon sunshine. Water two or three times, just before the plants bloom, with water in which sheep's dung has been steeped, but avoid any further stimulants; they more frequently promote fine foliage than fine bloom. Bear in mind that the best preparation for a race is spring and summer, in repose during the winter months.—*Mr. Beck, Gard. Chron., Sept. 17, 1845.*

Publication Received.—*The Rock Garden*, by E. H. Jenkins, Second Edition, Country Life Library, 20, Tavistock Street, London, W.C2, price 7s. 6d. net.

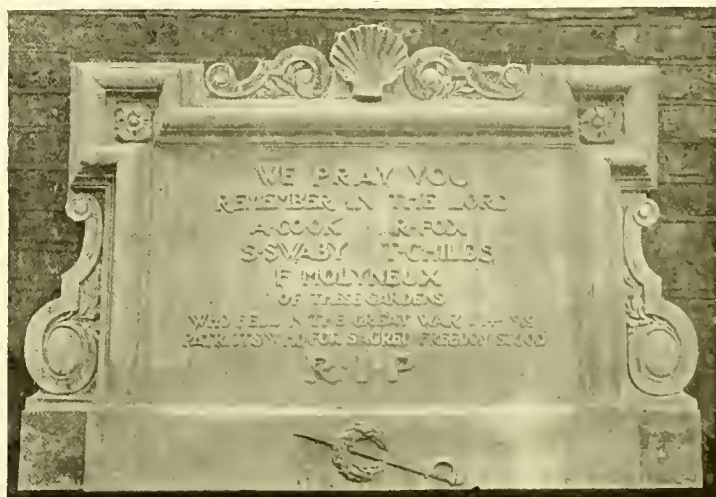


FIG. 55.—GARDENERS' WAR MEMORIAL ERECTED AT ALDENHAM HOUSE GARDENS.

other letters from contributors on pages 129, 144, 157 and 182 of the same volume. As a sequel, Mr. Beckett sends us the photograph reproduced in Fig. 55, of a memorial tablet which the Hon. Vicary Gibbs has had placed on a prominent wall in the gardens of Aldenham House. The tablet, prepared of terracotta, and constructed by the firm of Messrs. Pulham and Son from a design by Mr. Gibbs, measures some 4 feet in length, with a depth of about 30 inches. It is of a very striking appearance, and will form a lasting testimony to the courage and noble sacrifice of the brave men whose names are inscribed thereon.

Trial of Sweet Pea Novelties.—A trial of Sweet Pea novelties will be conducted by the National Sweet Pea Society at the University College Gardens, Reading, under the care of the Superintendent, Mr. J. A. Cobb. Raisers wishing to submit novelties for this trial are asked to send not fewer than twenty seeds to the Secretary of the National Sweet Pea Society, Mr. H. D. Tigwell, Greenford, Middlesex, on or before October 1, 1920.

Agricultural Text-books.—The University Tutorial Press, Ltd., have in preparation a new series of text-books for use in agricultural schools and colleges. The first book of the series, which it is hoped will be issued on the 1st October next, is *The Chemistry of Crop Production*, by Professor T. B. Wood, head of the Cambridge University School of Agriculture. This will be followed later by *Animal*

of dessert Apples; a challenge bowl, valued at 30 guineas, presented by Messrs. John Gilroy and Sons, for the best twelve boxes of dessert or culinary Apples, respectively, in Classes 13 and 14. Messrs. Coupe and Sons offer a challenge cup for the best exhibit in the classes for commercial growers cultivating fewer than 30 acres. In addition to these trophies, silver and gilt medals are offered by the Worshipful Company of Fruiterers for the best exhibit in certain specified classes, and there are other valuable prizes. The Secretary is Mr. W. Miskin, The College, Wye, Kent.

Exportation of Seed Potatoes to Holland.—The Ministry of Agriculture and Fisheries draws the attention of exporters of Potatoes to the regulations which the Netherlands Government propose shortly to issue for controlling the importation of Potatoes into Holland. The Ministry is informed that under these regulations Potatoes imported into Holland must have been inspected at the time of lifting on the field where they were grown, and must be free from Wart Disease. A certificate to this effect must be issued, as regards Potatoes grown in England and Wales, by an Inspector of the Ministry of Agriculture and Fisheries, who must also be present when the Potatoes are bagged. Only new bags may be used for this purpose, and they must be sealed by the Inspector, who will then issue a certificate that the Potatoes contained in the bag were grown on the inspected field. Growers wishing to export "seed" Potatoes to Holland should, therefore,

NOTICES OF BOOKS.

Roses in Australasia.

THIS Rose book from Australasia* is an interesting and pleasantly written work on Roses, and is quite worth a perusal by the English Rose grower, who will find that there is little difference required in the cultivation of the Rose in Australia or England, save that in the former country the seasons are turned round, summer being winter and vice versa, while the absence of frost allows a longer flowering period than we expect here, and permits, it would seem, the Tea Roses and some of the H.T.'s, which are of poor growth in this country (Iona Herdman, for example) to be grown with greater success. "Is it not puzzling and perplexing," asks the author, "that there are not far more really good Rose gardens to be seen? Does it not fill us with wonder when we attend a show to find that that wonderful display has been made entirely from the gardens of a couple of dozen enthusiastic exhibitors?" The author, were he resident in this country, might well ask precisely the same questions. He answers them by assuming that the state of things he finds arises only from want of knowledge, and with praiseworthy confidence he sets to work to enlighten his fellow countrymen as to how they may remedy the defect. We greatly fear that the true answer is lack of energy and will to take the necessary trouble. Rose-growing need not be an expensive undertaking, but it does require the single-minded devotion of much labour and much time, which the majority prefer to give to less exacting hobbies. We are nevertheless indebted to the author for his confidence in his theory, for it has given us the pleasure of reading his book.

The book is so evidently the result of first-hand information that it makes an interesting contribution to comparative Rose growing in different countries. We are told the varieties of Roses that will succeed and those that fail in Australia. Thus, Mildred Grant, one of the most reliable exhibition Roses in this country, appears there but seldom to produce a respectable flower. The last section of the book moreover contains chapters on Rose growing in the neighbouring colonies, that on New South Wales being contributed by Mr. G. W. Kershaw; South Australia, by Mr. H. Kemp; Queensland, by the late Mr. Geo. Watkins; Western Australia by Mr. J. C. Windsor; Tasmania, by Mr. J. R. Byfield; New Zealand, by Mr. W. E. Lippett and Mrs. Douglas, and a chapter on Rose growing in Oregon, U.S.A., is added by Mr. Jesse A. Curry. We find also a descriptive list of some 40 new varieties that have been raised in Australia and New Zealand, chiefly by Mr. Austen Clark in the former and Mr. W. E. Lippett in the latter country.

From the point of view of the English Rose grower, one of the most interesting items in the book is an account of an investigation the author has made in the disease known in this country as crown canker, which he finds can be cured by painting the stems (not the leaves) with dilute sulphuric acid at a strength of 1 oz. to a gallon of water; another investigator has obtained good results from the use of permanganate of potash applied at a strength of $\frac{1}{2}$ oz. to the gallon of water in the same manner. This disease has of late become extremely common in this country, few gardens being free from the trouble, and it is undoubtedly highly infectious. If this tiresome disease can be cured here in a similar way, the author will have done good service to Rose growers in Great Britain. He tells us that to effect a cure, the application of the specific must be made five or six times, at intervals of about a fortnight, and, though the plants may appear completely cured, they should be painted again after winter pruning, as there is a danger of the disease recurring in the following spring.

There is an excellent chapter on pruning, but we rather suspect from the photographs he gives that the author is not always quite drastic enough in following his own directions. In

ordinary Rose growing, nothing is gained and a good deal is lost if the stems are left so long that a number of buds remain dormant at the base of the stem. The object should be so to prune that all the buds retained are made good use of, and this is the reason for pruning weak growers harder than strong ones. The strong growing sorts will generally push more good growths from a given number of buds than will the weak growers.

In many respects, Australasia must be a delightful climate in which to grow Roses, and after visiting some of our own beds of Tea Roses, it is impossible to read without envy of a country where Mme. Constant Souper and the Cochet group will readily make bushes to fill a space 8 ft. in diameter. On the contrary we learn that the members of the group of lutea hybrids introduced by M. Pernet-Ducher, which give us some of our most highly-coloured flowers, prove to be comparative failures on the other side of the world. Doubtless, a beneficent nature provides everywhere compensation for some apparent drawbacks even in this country, and we cannot have it all ways. *White Rose.*

Plants infested with thrips, may, provided they are backward in the bud, be syringed during sunny weather with a mixture of salt at the rate of 1 oz. to two gallons of water; if the buds are already showing colour it should be safer to fumigate them rather than spray with the salt water.

The vagaries of the past season have resulted in abnormal colouring in the blossoms of several varieties, for instance, the first blooms of several of the salmon-flowered varieties developed speckling, whilst at least one variety, Bishton Wonder, changed its colour entirely, the first blooms being old-Rose pink instead of the normal mauve lilac shade, while several of the white sorts have opened with a trace of colour in their first blooms. September is an uncertain month, and we may experience cold autumnal days or hot, dry weather. It must be remembered that when plants are placed from a cool position in the open on to a dry stage in a plant house, they are sure to receive a check, and especially if the weather turns hot. In view of this the plants should receive plenty of air and be syringed overhead in very dry weather.



FIG. 56.— CARNATION LORD LAMBOURNE: A NEW BRIGHT-RED VARIETY OF THE PERPETUAL FLOWERING TYPE.

FLORISTS' FLOWERS.

PERPETUAL FLOWERING CARNATIONS.

ALL Perpetual-flowering Carnations required for winter blooming should be placed under glass by this date, even though they may appear to be doing well out of doors. If room in the plant houses is not available lights from frames or pits may be placed over them to ward off autumn dews and rains. At the time of housing the plants see that the shoots are made secure to suitable stakes, as they are very liable to become broken off. In view of the lack of sunshine for the past two months these Carnations are not likely to be badly infested with red spider or thrips, but it will be well to watch the plants carefully for the latter pest, which would soon spoil the earliest blooms.

After this month feeding should be largely discontinued, but plants growing freely should not be allowed to suffer from lack of nourishment. Although Perpetual Carnations are hardy and do well bedded out it is quite time that those in pots intended for winter blooming were brought under glass, for there is a vast difference in a plant growing in a pot and one bedded out.

The improvement of these flowers continues steadily, and one of the latest novelties is the variety Lord Lambourne, illustrated in Fig. 56. It is a fine bloom of a glorious shade of red, almost crimson scarlet. The growth is very vigorous and the stems are so stout as to scarcely require staking. The variety was exhibited finely by the raisers, Messrs. Stuart Low and Co., at the summer exhibition of the Royal Horticultural Society at Chelsea, some of the blooms measuring $3\frac{1}{2}$ inches in diameter. *Grower.*

*The Australasian Rose Book, by R. G. Elliott, 224 pp. Illustrated from photographs and drawings. Whitcombe and Sons, Ltd., Melbourne and London.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Cheshire.

Chysis.—By this time most plants of Chysis will be completing their pseudo-bulbs; when the foliage begins to turn yellow the plant will be approaching maturity, and the water supply at the roots should be regulated accordingly. Directly the pseudo-bulbs are fully developed, remove the plants to cooler and drier surroundings, where they may remain throughout the winter, and be given only sufficient water to keep the pseudo-bulbs plump and rigid. If, for any reason, some of the plants are still growing, they should be kept in the warm house, and the roots well supplied with moisture until the season's growth is completed.

Seedling Cypripediums.—Where Cypripediums seeds were sown at the beginning of the year, a number of seedlings will be ready for pricking off in store pots or pans. The pots should be filled half their depth with drainage material, and the remainder filled with compost consisting of clean Sphagnum-moss, and fibrous peat or A1 fibre in equal parts. Cut the materials in moderately fine portions, press the compost firmly in the pots, and trim the surface neatly with a pair of shears. Each pot will accommodate ten or twelve seedlings, according to their size. Others that were pricked off earlier may be given more space, and those already potted off singly may be afforded fresh rooting material and larger pots. As the plants increase in size the amount of drainage may be reduced, and a less quantity of Sphagnum-moss incorporated with the mixture, while for strong-growing kinds a little fibrous loam with all the fine particles shaken out may be included. Small seedlings should be placed in a moist, shady part of the warm house, where they will soon form tiny roots if sprayed over occasionally to prevent the compost becoming dry. Specimens that are nearing the flowering stage may be grown in a cooler temperature.

Vanda coerulea.—This beautiful blue Vanda is producing its flower-scapes, and should be exposed to plenty of sunlight, short of injury to the foliage, and ample ventilation allowed whenever the weather is favourable. *V. coerulea* needs a less humid atmosphere than other members of the genus, and more light and air. In country districts, where the atmosphere is free of all deleterious matter, the blue colouring of the flowers is usually well developed.

Habenaria.—These autumn flowering Orchids, which include *H. carnea*, *H. pusilla*, *H. Suzanneae*, and *H. rhodochila*, should be afforded a complete rest when their flowering season is over. The Cattleya house is a suitable place in which to grow them, or the warmer end of the intermediate division, where they will be free from drip. The soil should be kept quite dry during the winter, or the tubers will decay. The roots need a little moisture after the blooms are removed until the foliage has decayed.

PLANTS UNDER GLASS.

By JOHN COULTS, Foreman, Royal Botanic Gardens,
Kew.

Vallota purpurea.—The Scarborough Lily flowers during September, when choice subjects for the greenhouse are by no means plentiful. This beautiful South African bulbous plant is worthy of every effort to cultivate it successfully. But in most gardens, for some obscure reason, it is by no means a success; in fact it is generally seen at its best growing in cottage windows. If doing well the plant should be left alone, for it very much resents disturbance at the root. Therefore, when potting fresh stock care should be taken to use a compost that is

likely to remain sweet and in good condition for a number of years. The stock may be maintained by potting young offsets which healthy plants develop in quantity. The potting soil should consist of a fertile, medium loam, with the addition of enough coarse silver sand to keep it porous and sweet; for the same reason the drainage should be ample. After repotting, or potting up dormant bulbs, great care must be observed in watering, very little moisture being required until plenty of roots have developed. Dry bulbs may generally be purchased at this time. In common with many other S. African bulbs, a cool, greenhouse temperature suits this plant at all times. Although bulbs are generally obtainable at this season, the best time to establish fresh stock is during June and July. There are several varieties, including *eximia*, *magnifica* and *major*. There is also a beautiful hybrid between *Vallota* and *Cyrtanthus sanguineus*, which in flower and foliage is intermediate between the two parents.

Haemanthus.—Plants of *Haemanthus Katherinae*, also the varieties *Andromeda* and *King Albert*, should be finishing their growth and water should be withheld gradually from them. They may, at this season, be grown in cold frames, taking care to remove them to warmer quarters during the winter.

Lilium candidum.—Where it is intended to grow this Lily in pots, bulbs should be procured and potted this month, as it suffers from being kept out of the ground for any length of time. Naturally it starts making fresh growth as soon as the old foliage dies down. This Lily is a lime lover, therefore lime in some form should be included in the potting compost, which should consist of medium quality loam, with the addition of sand or old mortar rubble to keep the whole porous. This is not a stem rooting species, therefore in potting it is not necessary to allow room for top-dressings. Stand the pots in the open, or in a cold frame where the lights may be put on during times of heavy rains. Any attempt to force this Lily will prove a failure; it should be brought on gradually in a cool house.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weavoe
Castle, near Cardiff.

Carrots.—Main crop Carrots are ready for lifting and storing, which should be done whilst the weather is dry; at the same time cut off the leaves an inch from the crown. The roots should be placed in a cool position in the root-store, piling them in mounds with the crowns facing outwards and filling the spaces between each layer with moist sand or fine soil. Any roots damaged by the Carrot fly grub will fail to keep and such should be put aside for immediate use. Carrots sown in July should be kept watered during dry weather, for if growth is checked from this cause the roots are liable to split and become useless. Aphids is sometimes troublesome to the Carrot crop, and if present on the plants should be destroyed by spraying with an insecticide.

Onions.—It is advisable to lift with a fork any large Onions remaining in the bed and thus afford time to ripen the bulbs for keeping. Remove the green leaves, also any loose skins. Large Onions bruise very easily and should be handled with every care, standing them on soft hay, with the base downwards. An excellent place in which to ripen them is an airy loft with a slate roof, where the sun creates a high temperature; failing this, place them on the stage in a greenhouse, covering the bulbs with paper to shade them from the direct rays of the sun.

Endive.—When nearly full grown the earliest plants of Endive should be blanched. In the case of Lettuce-leaved varieties tying the leaves together is sufficient, but curled varieties should have a flower pot inverted over them to procure the requisite blanching. In either case the operation should be done whilst the plants are dry, otherwise the hearts will decay. Only sufficient to meet requirements should be treated on each occasion—successional batches may be brought under the process at intervals of ten

days. Later-sown seedlings should be transplanted as they become large enough. Give them a position on a warm border and keep them growing freely, so that towards the end of October they will be forward enough for removal to a place where they can be protected.

General Remarks.—The middle of September seldom passes without a short spell of frost, which is frequently followed by open weather until well into October. At the first indication of frost tender subjects, such as French Beans, Marrows and Tomatos should be provided with light protection, as a little extra care at this time may prolong their season considerably.

Parsley.—Plants raised from seed sown in July should be thinned to leave the remaining plants four inches apart. The surplus seedlings may be transplanted in a sheltered position where the protection of lights may be afforded them during the winter. Plant at a distance of nine inches apart each way, and afterwards water the roots. If through any failure, young plants are not available, a portion of the spring-sown Parsley should have all the older leaves removed, a system which will provide a satisfactory supply during the winter months. A few plants placed in five-inch pots will also prove useful.

THE HARDY FRUIT GARDEN.

By T. PATTERMAN, Gardener to C. A. CHIN, Esq., J.P.,
The Node, Codiote, Welwyn, Hertfordshire.

Plums and Gages.—Plum and Gage trees on walls have cropped excellently here, and we have very fine fruits, especially where they were thinned early, and on trees that set only a moderate crop. As the trees are cleared of their fruit an opportunity may be taken for further thinning of the shoots should it be found necessary to allow the air and sunlight to enter the branches. If the trees are not perfectly free from insect pests, take advantage of the opportunity of cleansing them, there being no fruit to consider. The trees may be sprayed thoroughly with a suitable insecticide, but whatever specific is used see that it reaches every part of the trees. After the spraying the trees should be washed with clear water the following day by means of the garden engine or it may be applied forcibly with a syringe, using a coarse jet. Late varieties of Plums, such as *Coe's Golden Drop*, *Late Orange*, *Grand Duke* and *President*, should be protected from birds, and the roots watered if necessary. So far wasps have not been troublesome this season, but it will be wise to keep a sharp watch for all wasp's nests and destroy them immediately. Choice dessert Plums may be protected by wasp-proof netting, but where the use of this material can be avoided the fruit will keep in a much better condition.

General Remarks.—The hoe should be used freely at this season among all bush fruits to keep them free from weeds. Often when these fruits are protected from birds by nets, the weeds gain headway and are allowed to seed, but if the hoe is used frequently during the next six weeks they will be destroyed before the seeding stage.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNBURGHOLME, Warter Priory, Yorkshire.

Eremuri.—Now is a suitable time to order these delightful bulbous-plants from the nurseryman. Obtain three-year-old plants from a reliable source and plant them immediately on arrival; spread the roots out almost horizontally and finally cover the crowns with three or more inches of soil, according to the facilities at hand for affording protection to the roots during winter. Coconut fibre refuse is a suitable material for this purpose. The soil should be well drained and the position sheltered from cold winds; also it is essential that overgrowth does not obstruct the maximum amount of sunshine from reaching the roots in summer. The best soil is loam of a medium texture—three feet deep—enriched with well-decayed cow-manure and made porous by the addition of coarse sand and charcoal. Slugs are partial to *Eremuri*, therefore it is advisable to place perforated zinc collars around the crowns to

prevent serious damage. Surface dressings of thoroughly decayed manure, leaf-mould and river sand are beneficial to the plants, also occasional waterings with diluted liquid manure during the growing season. The full beauty of *Eremurus* is seen when bold groups are planted between drifts of *Erica*, with a sheltering background of Pines.

Paeonia Moutan.—The site for Tree Paeonies should be selected now, as early planting is advantageous—especially in exposed, northern districts. A west or north-west aspect should be chosen for the plants, to obviate a too early growth in spring, which is liable to be damaged by frost. Moutan Paeonies are brilliant subjects for planting in isolated beds or lawns; they may be used effectively in undulating spaces in large rock gardens. Rich soil is desirable, but the texture thereof is not of paramount importance, provided it is not excessively retentive of moisture. Occasional mulchings with partly decomposed cow-manure will greatly benefit the roots in summer. Tree Paeonies obtained from the trade are usually grafted, and care should be taken in planting, to cover the grafts with a few inches of soil; this will result, in due course, in the formation of roots above the graft. Grafting is performed in frames during August, on roots of herbaceous varieties.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPANDEY CLAY, M.P., Ford Manor, Lingfield, Surrey.

Early Vinery.—Root-lifting and any other work in the borders should be done at the first opportunity. Root-lifting is necessary when the vines become weak and the compost exhausted by time and frequent waterings. Fresh soil of good quality should then be substituted and sufficient of the compost should be prepared equal to the probable demand, using a fair amount of bone-meal, charred refuse, lime rubble, and a sprinkling of a coarse and fine grade vine manure near the surface as the work proceeds. Commence at the extreme front of the border, removing the old compost with a fork, and taking care not to injure the roots. Keep the latter moist and covered up until the drainage is put in order and ready for receiving the new compost. Two layers of fresh turves laid grass side downwards, and made thoroughly firm will keep the drainage clear, building up the front in the same manner, and filling in the intervening space with the prepared compost until it is sufficient for covering the first layer of roots. Spread out the roots evenly, removing all faulty and injured parts with a sharp knife. Place a little soil over them, and make the border firm by treading; follow with another layer of roots and soil until all is finished. While this is being done keep the house fairly close, the vines moist and, in severe cases, shaded for a short time.

Cucumbers.—Plants raised from seed sown about the middle of last month are advanced in growth considerably. Ventilate the house freely on all favourable occasions, and supply the roots with a medium amount of moisture to ensure strong, stocky growth. Stop the side-shoots, remove all male blossoms also all female flowers, until such time as it is necessary to let the plants fruit, and, afterwards, crop with moderation. Do not use a large amount of soil at the commencement, rather give light, rich top-dressings when the roots appear on the surface. By these means the plants may be kept in good health during the autumn and better than by allowing them to root deeply into a bed of heavy compost. A night temperature of 65° at 10 p.m. will be sufficient for the present. A successional sowing may be made at once, but unless the autumn remains very favourable, these plants will not be of much value. Keep all decayed leaves removed from plants in full bearing, but do not defoliate excessively at one time, as the plants are slow in recovering from a check after this date. Give the roots diluted liquid manure twice a week to induce as much young growth to develop as possible and otherwise encourage the plants to grow freely by maintaining a genial atmosphere.

HARDY FLOWER BORDER.

THE AFRICAN FORM OF SCABIOSA COLUMBARIA.

In February last I received a packet of seeds from South Africa labelled South African Scabious. The seeds germinated readily in heat, and some 50 plants have been brought to the flowering stage.

On submitting specimens to Kew I was informed that it is similar, if not identical, with our native species, *S. Columbaria*, and that the plant is widely scattered over South Africa. Whether it has been introduced into South African gardens and improved by selection, I am unable to say, but the plant has qualities that promise to make it a choice subject for beds and borders. It is a true perennial, erect, and requires no staking, is easily raised from seed and flowers in August from a spring sowing. The flowers are developed on tall, leafless stems



FIG. 57.—AFRICAN FORM OF SCABIOSA COLUMBARIA : SHOWING HABIT OF PLANT : MUCH REDUCED.

and the great length of stalk renders them suitable for use as cut blooms. The individual flowers are much larger than those of the popular *S. caucasica*, which is by no means the easiest plant to grow and maintain long in robust condition.

The range of colour is remarkable—pale to dark blue, soft rose, rich and pale pink shades were all to be found in the fifty plants I have raised.

I am informed that the plant is not new to British gardens, and that on at least one occasion it was grown in Scotland and proved quite hardy.

The illustration in Fig. 57 shows the habit of the plant at the age of six months, whilst the reproduction in Fig. 58 shows the size and shape of the flower head.

The plant bears seeds freely, and these are fast ripening from the earliest flowers. T. Hay, Regent's Park.

VERBENAS.

WHAT a brilliant plant *Verbena chamaedrifolia* is! A nice-sized group trailing over stones is at present a glow of crimson, and the prospect is that there will be an even finer display for the next two months, longer if we escape an October frost. The group is composed of small plants rooted in spring, but I should be inclined to anticipate an even finer effect from autumn-struck plants, grown on in spring into bulky specimens before being planted out. For several years *Verbena venosa* has occupied a prominent position in the flower garden, usually in conjunction with a dwarf *Ageratum*. This year the latter has been replaced by *Matricaria eximia* "Golden Ball," which gives an altogether different effect, rather, I think, to the diminishing the glory of the *Verbena*, though the border as a whole is perhaps more brilliant. The danger of mishap from using *Verbena* plants from seed is well illustrated by two long borders containing about 1,000 plants of what were purchased for the variety *Miss Willmott*. There is among them all colours from white, pink, rose to scarlet and crimson, as well as shades from lavender to dark purple. When it is understood that the colour scheme of the garden is pink, deep rose, mauve and purple it will be seen that these *Verbenas* are no help.

VIOLA GRACILIS

Though this species has been in these gardens for very many years, it is only now that I have come to realise what a splendid flowering plant it is. A goodly number in the mass was planted in the herbaceous border in the spring, and few plants have given more pleasure than this. The purple is of the right shade, and the succession of bloom has been perfect, so that I shall hope to use it more in the future. Another *Viola* that is equally floriferous and long standing is the white form of *V. cornuta*, at least I accept it for that species, though *cornuta* itself is very far from being a continuous flowering plant. Over 50 years ago there was much discussion regarding the qualities of *V. cornuta* as a bedding plant, some being of opinion that two forms were in cultivation, one pre-eminently floriferous and the other of no special importance. Probably these are represented in the white and mauve forms grown here.

BORDER CARNATIONS.

WE are getting into odd ways with Carnations, and this year, after a long interval, I have grown some in pots to flower before those on the borders. I believe a frequent cause of failure to obtain the best results with Carnations in pots, is starving the young plants in their early stages. None of them should be wintered in less than a 4 inch pot, whilst the stronger specimens should be in 5 inch pots. Though apparently quiescent during winter, they are not so really, for those treated to abundant root-room, slow though the progress may seem, undoubtedly do grow all through the winter months. Another advantage follows planting in pots of these dimensions, inasmuch as the plants need not be re-potted so hurriedly in spring; any time in March, with us, is early enough. Pots of 7 inch size are suitable for a single plant to flower in. In addition to the summer spike, it is possible to induce the stronger plants to produce a second crop of flowers from the "grass" that usually provides layers, but of course this is not important where Perpetual varieties are grown, only one may like a few yellow fancies, picotees, and salmons of the type of *Lady Hermione*, which perpetual sorts have hitherto failed to give us, and in these circumstances it is worth while to induce a certain number of plants to flower again in the early months of winter. I have always found pot-grown border Carnations invaluable for propagating from. It is well known that Carnations are very difficult to keep year after year in some gardens, and in such cases, plants grown in pots, turned out on a border and layered provide a certain means of maintaining a stock of healthy plants. R. P. Brotherston, Tynningham Gardens, Prestonkirk.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

THE MARKET FRUIT GARDEN.

THE peculiar summer continues its unnatural course. After a soaking

July we have had a dry and very cold August. At my establishment rain fell on only six days, four of which were at the beginning of the month, and there were several slight ground frosts towards the end. In consequence of the low temperature fruit has ripened slowly. Yet it is of much better quality than seemed probable at one time. Apples are exceptionally well coloured, there being a bright flush even on such normally green varieties as Royal Jubilee and Warner's King. The dry weather has been very welcome for hoeing and horse cultivation, and the orchards begin to look tidy again.

RESULTS OF WINTER SPRAYING.

At one time I was inclined to agree with some of the mycologists who tell us that we cannot hope to achieve much by winter spraying beyond the removal of moss and lichen. The experience of last season and the present one has, however, completely altered my opinion, and I am now firmly convinced of the value of winter spraying as a preventive of fungous diseases. Last year there was little disease of any kind, and one could not be quite sure of the results of spraying. This year Apple scab and brown rot are prevalent, and spraying has a chance to show its value. The contrast between sprayed and unsprayed trees is so striking that I no longer feel any doubt. By far the best crops of Apples and Plums are in two orchards that were sprayed last winter, and the foliage is much stronger and healthier. There are blocks of Worcester Pearmain in four orchards. In one that was winter-sprayed the crop is a picture, the fruit being well developed and practically free from scab. In the other orchards fruits of this variety are badly scabbed, and there is a large proportion of small fruit, in spite of summer spraying with lime-sulphur. In Plums there is much less brown rot in the orchard that was winter-sprayed. This has given me such a lesson that I shall go in strongly for spraying next winter, and shall rely on this entirely as a preventive of fungous diseases, concentrating on insect pests in the summer. It would, of course, be foolish to deny that the normal summer spraying against fungous diseases does good; but it is often disappointing, and I doubt if it is worth while when winter spraying is so successful. The wash used during the past two winters was a combination of copper sulphate and caustic soda, but lime-sulphur will be substituted in the coming winter. Caustic soda should not be used repeatedly, as it has a hardening effect on the bark. Moreover, it is so unpleasant for the men who have to apply it that a change will be welcome. Caustic soda was used only because the trees were rather heavily coated with moss, due to neglect of winter spraying during the war. Lime-sulphur is an excellent cleanser if the trees are not too mossy.

AN UNCOMMON PEST.

For the first time in the history of this farm caterpillars of the Eyed Hawk Moth have been found on Apple trees. Many of the young shoots on these trees, which have been planted only two years, were noticed to be entirely stripped of leaves, not even the petiole being left. It was rumoured at first that the leaves had been torn off by the hoers when pulling off twining weeds; but examination soon discovered the culprits to be these huge caterpillars, which are 3 in. long and, when fully fed, as thick as one's thumb. No partly-eaten leaves were to be seen, the caterpillars evidently making short work of the whole. This would be a very formidable pest if the caterpillars were numerous; but this is probably seldom the case, as the moth lays her eggs singly on the leaves.

MANURING FOR CONTINUOUS CROPPING.

Fruit-growing becomes more and more scientific. Hitherto the manuring of orchards has been done on more or less haphazard lines. Most growers restrict their manuring to winter dressings, either at regular intervals or when the trees seem to need help. There is always an extra amount of manuring done after a heavy crop, such as that of 1919, because it is recognised that the trees have undergone a strain and want feeding if they are to continue cropping. Those who have given the matter much thought, however, must have realised that manuring in the winter is too late to help the yield of the following year, since the fruit buds are formed during the year previous to that in which they open. Moreover, they burst in spring before the roots have started into action and become capable of utilising the manure and feeding the tree. For the production of strong bloom and the setting of fruit the tree must, therefore, depend on assimilated plant food which it has been able to store during the previous season.

Using these facts as a basis, a system of manuring for continuous cropping has been worked out by Mr. H. E. P. Hodson, F.C.S., and put into practice at Mr. H. S. H. Bickham's fruit farm at Ledbury. As described by the former in No. 6 of the *Journal of Pomology*, the system is briefly as follows: "A special soluble organic manure is applied in early August. This time is chosen because the swelling and development of the crop are then nearing completion. The food material given will not, therefore, pass into the fruit. It will go instead into the leaves, where it will be fabricated; and, not being wanted for immediate needs, must be stored by the tree for the next year, both in its fruit-buds and its system generally. This August dressing is followed by winter manuring with some lasting organic material, such as hoof or meat meal. This ensures that the trees shall be able to support the blossoms by a vigorous growth, so that the fruit may be held and the work carried on. These two dressings are given annually, and it is considered important that there should be no break. As a result it is hoped that the distressing habit of alternate year bearing, common to many late varieties of Apples, has been overcome."

The system is certainly well thought out, and deserving of extended trial. The fact that Mr. Bickham has secured heavy crops for four successive seasons, including the decidedly lean years 1918 and 1920, is a very strong argument in its favour. Yet it would be unwise to conclude that this result is due to the system of manuring until the experiment has been

observed for several more years. A few other growers here and there were lucky enough to have good crops in the lean years referred to. At the Royal Horticultural Society's gardens at Wisley, for instance, there is a fall crop of Apples this season, and there was a good yield last year, and, I believe, in 1918 also. Yet these trees have had no manure at all, and show their need of it plainly in lack of growth and the appearance of the leaves.

A POOR APPLE AND A GOOD ONE.

However successful James Grieve may be in the north, it is certainly not a success with me. Most of the trees are wrecks owing to most persistent canker, which seems to prefer the young wood in this variety. The struggle has lasted long enough, and James Grieve is now condemned to top-grafting. As the stems and the lower part of the branches are fairly healthy, there is reason to hope that this may prove successful. It is a very pleasant Apple to eat, but it is surprising that it should ever have been advocated as a market fruit. It is too large for dessert, it is very easily marked or bruised, and it has the yellow colour which does not attract the public.

The choice of a variety to graft on to these trees next spring will probably fall on Early Victoria, which answers well for this purpose. This is easily the most useful of our early cooking Apples for market purposes. It is ready to pick very early, is of good size, and has the grass green colour that the public like in a cooker. Moreover, the tree comes quickly into bearing, and yields very heavily and regularly, and yet makes healthy growth.

HIGH WAGES AND LABOUR-SAVING.

There has been another compulsory rise in wages, men of twenty-one and over now receiving 16s. 6d. a week. Most growers recognise that the money is not more than the men need to live on in present conditions, but those with small businesses are genuinely troubled to know how they are to meet the expense. In the case of larger growers I doubt if the high wages are quite such a bogbear as they have been made to appear. High wages in the towns mean a much greater demand for fruit, for the working man is a very large consumer when he has the means to buy; and we cannot expect to escape a corresponding rise in agricultural wages. Fruit is now considered a necessity for every one instead of a luxury for the rich, as it was in the childhood of many of us; and this must mean a stronger demand and better prices. None the less, growers are bound to adopt every means they can to reduce such expensive operations as hoeing and digging in fruit plantations. With me it became a question of grassing down several plantations, failing some mechanical means of cultivation which would operate between rows of bush fruits and closer up to the trees than is possible with horse-drawn implements. Although I have some trees in grass which have so far proved quite successful, I do not welcome the idea of extending the system, as it gives less scope for manuring and involves a lot of mowing. I was, therefore, very glad to find at a local demonstration of light tractors that a little motor cultivator of rather recent introduction appeared to be a thoroughly efficient tool. One of these machines has been obtained, and has just been delivered; and I am sanguine that it will not only reduce hoeing and digging to a minimum, but also keep the orchards cleaner and more thoroughly cultivated than ever before. *Market Grower.*

ORCHID NOTES AND GLEANINGS.

NEW HYBRIDS.

THREE pretty new hybrids are sent by R. G. Thwaites, Esq., Chessington, Christchurch Road, Streatham, for recording.

ODONTOGLOSSUM O'BRIENIANUM, raised between *O. Thompsonianum* and a showy *O. Harryanum* hybrid of unknown parentage, is a great improvement on the *Thompsonianum* class, being larger, and with broader segments. It is also the darkest of the section, the flower being dark maroon colour, with only slight bluish-white markings at the margins, and the tip of the labellum, which has a bright yellow crest.

ODONTIODA VIOLETTE, between *Oda Thwaitesii* (*C. vulcanica* × *O. Harryanum*) features *O. Harryanum*, though much darker in colour. The violet colour of *Cochlodora vulcanica* is brightly shown on the petals and inner halves of the sepals and lip, the front of which is white.

ODONTIODA SISKIN, obtained by crossing *Oda Charlesworthii* (*C. Noezliana* × *Odm. Harryanum*) and *Oda. Sanderae* (*C. Noezliana* × *Odm. percutum*) shows the double influence of *C. Noezliana* in its neatly formed flower, of similar scarlet-red tint to *C. Noezliana*, but with *Odontoglossum* form. The lip is blotched with orange scarlet.

LAELIO-CATTLEYA RAJAH BLENHEIM VARIETY.

A FLOWER of this pretty cross between *C. Dowiana aurea* and *L.-C. Etnick* (*C. Dowiana aurea* × *L.-C. blechleyensis*) is sent by Mr. J. T. Barker, Orchid grower to the Duke of Marlborough, Blenheim, Woodstock. It differs widely from the original form, and from most others of its class, in having the sepals light nankeen yellow and the petals rosy mauve, with clearly defined cream-white lines radiating from the base, and getting finer and more branched towards the margin. The lip is vinous purple, with obscure gold lines from the base, forming a very effective contrast to the nankeen-yellow sepals extended behind. The lip in colour and shape shows much of *C. Warscewiczii*, which, with *L. tenebrosa* produced *L.-C. blechleyensis*, but the sepals adhere to *C. Dowiana*. Mr. Barker also sends a flower of *B. L. C. Rowena* (*B. Digbyana* × *L.-C. Doris*) showing how completely in his new *B.-L.-C. Blenheim Orange* the narrow proportions of *B.-L.-C. Rowena* acquired from the *L. harpophylla* in *L.-C. Doris*, has been over-ridden by the final crossing with *C. Dowiana* and a finely-formed flower secured, with the rich orange of *L. harpophylla*.

PHALAENOPSIS AMABILIS RIMES-TADIANA.

FRESH-IMPORTED plants of this and other large-leaved *Phalaenopsis* always show that in their natural position the short stems are inclined forward, so that the leaves hang downward and clear of the tree on which the plants are growing. In gardens, too frequently, this hint as to the required position is ignored, and the leaves and stems supported in an upright or horizontal position. This often results in the loss of the middle leaf from moisture, and spotting of the leaves in consequence of the retarded flow of the sap. In the Warren House gardens at Stanmore are some good examples bearing on the case. A small batch was injured by cold, and some died, the rest being put into suspended pans. The stronger had the pans tilted well forward, and produced fine healthy leaves, the unrestricted downward pose seeming to have a direct effect on the free flow of the sap, and consequent leaf development. Those hanging horizontally did not make any progress until they were tilted forward. Such seemingly small matters of natural requirements make great differences in plant culture.

LISSOCHILUS SPECIOSUS.

During the past few weeks a plant of this interesting, but rather uncommon *Lissochilus*, has been producing a fine spike in the gardens of Mr. W. R. Lysaght, Castleford, Chestow. It commenced to push up a spike early in the spring, and the inflorescence attained a height

of seven feet, when it was cut to prevent undue exhaustion of the pseudo-bulbs; judging from the numerous buds still forming it would have continued to elongate for some weeks. On an average there were twenty blooms open at one time, and when the spike was cut just over forty flowers had faded.

The blooms are two inches across and yellow in colour, the lip having violet markings at the base; altogether it is a free flowering and handsome species. The pseudo-bulbs were sent from South Africa six years ago.

The genus *Lissochilus* includes a number of species of horticultural merit, but unfortunately they do not succeed for many years after being imported, a remark which applies particularly to the tropical plants, of which the beautiful *L. Mahonii* and *L. giganteus* may be cited as examples. These two species require the temperature of a warm house, but *L. speciosus* and other South African subjects will thrive in an intermediate division. The work of repotting is best done when growth begins, and a mixture of loam, sand, and leaf-mould provides a good rooting medium. During the period of growth a copious supply of water is needed, but when the pseudo-bulbs are completed a much less quantity of moisture suffices. *T. W. Briscoe.*

INDOOR PLANTS.

RUSSELLIA.

RUSSELLIA juzeai, *R. sarmentosa* and *R. Lemoinei* are all very graceful plants, at one time more or less common in gardens, but now by no means extensively cultivated. Specimens planted out attain a height of three to four feet. They make beautiful basket plants, their slender drooping habit and scarlet flowers showing to advantage when grown in this way. They require an intermediate temperate when growing actively, but may be placed in the greenhouse when in flower. Where it is desired to grow them as basket plants, young stock should be propagated at this season by means of cuttings, which root readily in a close propagating case.

ORNAMENTAL LEAVED STOVE PLANTS.

THE present is a suitable time to increase the necessary stock of many choice foliage plants. Growth is stronger and healthier now than after the winter. Young, vigorous plants have also a better chance of wintering well, compared with old worn out stock that is too often kept for spring propagation. Most subjects root readily at this time in a warm propagating case. They include such popular and useful decorative



FIG. 58.—FLOWER OF SCABIOSA COLUMBATA REPRODUCED NATURAL SIZE; THE COLOUR VARIES FROM PINK TO DARK BLUE. (see page 131.)

TREES AND SHRUBS.

SPIRAEA ARBOREA GLABRATA.

For wide shrubberies, large gardens and parks, I look upon the above species as a more handsome subject than *S. Lindleyana*, to which group of the genus it belongs. The large trusses of white flowers are similar if a trifle more compact; but the foliage looks different and quite distinct. Each leaf consists of fifteen to twenty-one leaflets, which are broader than those of the other species named, and beautifully plicate owing to the regularity with which the lateral nerves are given off. At least four forms of this type are in cultivation, and there is room for *S. Aitchisonii*, with the narrowest leaves, and *S. arborea*, with the widest ones. The bush grows five to ten feet high and flowers quite freely. It was introduced in 1910 by Späth, of Berlin, and does not seem to be catalogued by nurserymen in this country. *J. P.*

plants as *Acalyphas*, *Dieffenbachia*, *Pandanus*, *Sanchezia*, *Codiaeums* (*Crotons*), *Colons*, *Phyllanthus*, *Hoffmannia* and *Leas*. *Foreman.*

PLEROMA ELEGANS.

THIS *Pleroma* takes some time to attain a fair size, and in the olden days it was, with a few others, regarded as a good test of the cultivator's skill. It forms a branching shrub, that is said to attain a height of five feet. The leaves, which are remarkable for their prominent reticulations, are of a bright shining green tint. The flowers are freely borne on the points of the shoots. They are about a couple of inches in diameter, and of a rich bluish purple colour—a very striking shade. This *Pleroma* may be propagated by cuttings of the half-ripened shoots, inserted in sandy peat, and covered with a bell glass, but they take a long time to root. The most suitable compost for established plants is good fibrous peat, with a liberal amount of rough silver sand. *W. T.*

INTENSIVE CULTIVATION.*

ALTHOUGH that which intensive cultivators accomplished during the war is small in comparison with the great work performed by British agriculturists, yet nevertheless it is in itself by no means inconsiderable, and is, moreover, significant, and deserves a brief record. That work may have turned, and probably did, turn the scale between scarcity and sufficiency; for, as I am informed, a difference of 10 per cent. in food supplies is enough to convert plenty into dearth. Seen from this standpoint, the war-work accomplished by the professional horticulturist—the nurseryman, the florist, the glass-house cultivator, the fruit-grower and market gardener, and by the professional and amateur gardener and allotment holder assumes a real importance, albeit that the sum total of the acres they cultivated is but a fraction of the land which agriculturists put under the plough.

As a set-off against the relative smallness of the acreage brought during the war under intensive cultivation for food purposes, it is to be remembered that the yields per acre obtained by intensive cultivators are remarkably high. For example, skilled Onion-growers compute their average yield at something less than 5 tons to the acre. A Chrysanthemum-grower who turned his resources from the production of those flowers to that of Onions obtained over an area of several acres a yield of 17 tons per acre. The average yield of Potatoes under farm conditions in England and Wales is a little over 6 tons to the acre, whereas the army gardeners in France produced, from Scotch seed of Arran Chief which was sent to them, crops of 14 tons to the acre. Needless to say, such a rate of yield as this is not remarkable when compared with that obtained by Potato-growers in the Lothians or in Lincolnshire, but it is nevertheless noteworthy as an indication of what I think may be accepted as a fact, that the average yields from intensive cultivation are about double those achieved by extensive methods.

The reduction of the acreage under soft fruits—Strawberries, Raspberries, Currants, and Gooseberries—which took place during the war gives some measure of the sacrifices—partly voluntary, partly involuntary—made by fruit-growers to the cause of war-food production. The total area under soft fruits was 55,560 acres in 1913, by 1918 it had become 42,115, a decrease of 13,445 acres, or about 24 per cent. As would be expected, the reduction was greatest in the case of Strawberries, the acreage of which fell from 21,692 in 1913 to 13,143 in 1918, a decrease of 8,549 acres, or about 40 per cent. It is unfortunate that had causes often have best propagandas, for were the public made aware of such facts as these they would realise that the present high prices of soft fruits are of the nature of deferred premiums on war-risk insurances with respect to which the public claims were paid in advance and in full.

I should add that the large reduction of the Strawberry acreage is a measure no less of the shortsightedness of officials than of the public spirit of fruit-growers; for in the earlier years of the war many counties issued compulsory orders requiring the grubbing up and restriction of planting of fruit, and I well remember that one of my first tasks as Controller of Horticulture was to intervene with the object of convincing the enthusiasts of corn production that, in war, some peace-time luxuries become necessities, and that, to a sea-girt island beset by submarines, home-grown fruit most certainly falls into this category.

Those who were in positions of responsibility at that time will not readily forget the shifts to which they were put to secure and preserve supplies of any sorts of fruit which could be turned into jam—the collection of Blackberries, the installation of pulping factories which Mr. Martin and I initiated, and the

rushing of supplies of scarcely set jam to great towns, the populace of which, full of a steadfast fortitude in the face of military misfortune, was ominously losing its sweetness of disposition owing to the absence of jam and the dubiousness of the supply and quality of margarine.

But though the public lost in one direction is gained in another, and the reduction of the soft-fruit acreage meant—reckoned in terms of Potatoes—an augmentation of supplies to the extent of over 100,000 tons. Equally notable was the contribution to food production made by the florists and nurserymen in response to our appeals. An indication of their effort is supplied by figures which, as president of the British Florists' Federation, Mr. George Mouuo—whose invaluable work for food production deserves public recognition—caused to be collected. They relate to the amount of food production undertaken by 100 leading florists and nurserymen. These men put 1,075 acres, out of a total of 1,775 acres used previously for flower-growing, to the purpose of food production, and they put 142 acres of glass out of a total of 218 acres to like use. I compute that their contribution amounted to considerably more than 12,000 tons of Potatoes and 5,000 tons of Tomatoes.

The market growers of Evesham and other districts famous for intensive cultivation also did their share by substituting for luxury crops, such as Celery, those of greater food value, and even responded to our appeals to increase the acreage under that most chancy of crops—the Onion, by laying down an additional 4,000 acres, and thereby doubling a crop which more than any others supplies accessory food substances to the generality of the people.

In this connection the yields of Potatoes secured by Germany and this country during the war period are worthy of scrutiny.

The pre-war averages were: Germany, 42,450,000 tons; United Kingdom, 6,950,000 tons; and the figures for 1914 were: Germany, 41,850,000 tons; United Kingdom, 7,476,000 tons.

Germany's eupreme effort was made in 1915 with a yield of 49,570,000 tons, or about 17 per cent. above average. In that year our improvement was only half as good as that of Germany: our crop of 7,540,000 tons bettering our average by only 8 per cent. In 1916 weather played havoc with the crops in both countries, but Germany suffered most. The yield fell to 20,550,000 tons, a decrease of more than 50 per cent., whilst our yield was down to 5,469,000 tons, a falling off of only 20 per cent. In the following year Germany could produce no more than 39,500,000 tons, or a 90 per cent. crop, whereas the United Kingdom raised 8,604,000 tons, or about 24 per cent. better than the average. Finally, whereas with respect to the 1918 crop in Germany no figures are available, those for the United Kingdom indicate that the 1917 crop actually exceeded that of 1918.

There is much food for thought in these figures, but my immediate purpose in citing them is to claim that of the million and three-quarter tons increase in 1917 and 1918 a goodly proportion must be put to the credit of the intensive cultivator.

I regret that no statistics are available to illustrate the wartime food production by professional and amateur gardeners. That it was great I know, but how great I am unable to say. This, however, I can state, that from the day before the outbreak of hostilities, when, with the late Secretary of the Royal Horticultural Society, I started the intensive food-production campaign by urging publicly the autumn sowing of vegetables—a practice both then and now insufficiently followed—the amateur and professional gardeners addressed themselves to the work of producing food with remarkable energy and success. No less remarkable and successful was the work of the old and new allotment holders, so much so indeed that at the time of the Armistice there were nearly a million and a half allotment holders cultivating upwards of 125,000 acres of land: an allotment for every five households

in England and Wales. It is a pathetic commentary on the Peace that Vienna should find itself obliged to do now what was done here during the war—namely, convert its parks and open spaces into allotments in order to supplement a meagre food supply.

This brief review of war-time intensive cultivation would be incomplete were it to contain no reference to intensive cultivation by the armies at home and abroad. From small beginnings, fostered by the distribution by the Royal Horticultural Society of supplies of vegetable seeds and plants to the troops in France, army cultivation assumed under the direction of Lord Harcourt's Army Agricultural Committee extraordinarily large dimensions: a bare summary must suffice here, but a full account may be found in the report presented by the Committee to the Houses of Parliament and published as a Parliamentary Paper.

In 1918 the armies at home cultivated 5,869 acres of vegetables. In the summer of that year the camp and other gardens of our armies in France were producing 100 tons of vegetables a day. These gardens yielded, in 1918, 14,000 tons of vegetables, worth, according to my estimate, a quarter of a million pounds sterling, but worth infinitely more if measured in terms of benefit to the health of the troops.

As the result of General Maude's initiative, the forces in Mesopotamia became great gardeners, and in 1918 produced 800 tons of vegetables, apart altogether from the large cultivations carried out by His Majesty's Forces in that wonderfully fertile land. In the same year the forces at Salonika had about 7,000 acres under agricultural and horticultural crops, and raised produce which effected a saving of over 50,000 shipping tons.

Even from this brief record it will, I believe, be conceded that intensive cultivation played a useful and significant part in the war: what, it may be asked, is the part which it is destined to play in the future? So far as I am able to learn, there exist in this country two schools of thought or opinion on the subject of the prospects of intensive cultivation, the optimistic and the pessimistic school. The former sees visions of large communities of small cultivators colonising the countryside of England, increasing and multiplying both production and themselves, a numerous, prosperous, and happy people and a sure shield in time of war against the menace of submarines and starvation. "Those on the other hand who take the pessimistic view, point to the many examples of smallholders who 'plough with pain their native lea and reap the labour of their hands' with remarkably small profit to themselves or to the community—smallholders like those in parts of Warwickshire, who can just manage by extremely hard labour to maintain themselves, or like those in certain districts of Norfolk, who have let their holdings tumble down into corn and who produce no more and indeed less to the acre than do the large farmers who are their neighbours.

Before making any attempt to estimate the worth of these rival opinions it may be observed that the war has brought a large reinforcement of strength to the rank of the optimists. A contrast of personal experience illustrates this fact. When in the early days of the war I felt it my duty to consult certain important county officials with the object of securing their support for schemes of intensive food production, I carried away from the conference one conclusion only: that the counties of England were of two kinds, those which were already doing much and were unable therefore to do more, and those which were doing little because there was no more to be done. In spite of this close application of the doctrine of Caudine—that all is for the best in the best of all possible worlds—I was able to set up some sort of county horticultural organisation, scrappy, amateurish, but enthusiastic, and the work done by that organisation was on the average good; so much so indeed that when after the Armistice I sought to build up a permanent county horticultural organisation I was met by a changed temper.

(To be continued.)

* Presidential Address by Professor Frederick Keeble, C.B.E., Sc.D., F.R.S., to the Agricultural Section, British Association for the Advancement of Science, Cardiff, 1920.

NURSERY NOTES.

ANNUALS AT READING.

THE large collection of annuals which Messrs. Sutton and Sons exhibited at the R.H.S. meeting on August 24 induced a visit to their trial grounds which produced the flowers. This has been a notoriously unfavourable season for annuals, and it was a matter of great interest to ascertain which sorts yield the best results this year. Generally it has been found that the wet weather and low temperature have produced a wealth of foliage at the expense of flowers, and this has been particularly the case where the ground has been "done well," by which expression generous manuring is usually understood.

That the gathering of so many thousands of flowers for the Vincent Square display had by no means depleted the stocks at Reading was readily apparent even before the train reached Reading, for, from the carriage windows, passengers on the G.W. Railway main line are treated to a glorious display of bloom at Langley, and again farther west as Reading is approached.

The conditions under which the trials are conducted at Reading are generally well known, and do not require recapitulation. Generous breadths, of what may be termed the standard varieties are all to be seen, and alongside them, for full comparison and consideration, are numerous novelties.

One naturally associates Antirrhinums with the Reading trials, and the long borders immediately inside the entrance contain large numbers of plants of the new strain, which, at present is known as Dwarf Intermediate. This type will supply a "long-felt want," for, whilst sufficiently dwarf and compact to be used in the front row of borders and as a groundwork in summer-bedding schemes, they are very floriferous, and the individual flowers are as large as those on the well-known Intermediate strain. As is known to lovers of Antirrhinums, the Tom Thumb varieties are disappointing in that they do not flower until late in the season, whilst the plants of this new type flower quite early and continuously till late in the autumn. These and both of the taller types are splendid at Langley also, and abundantly show that the Antirrhinum is a plant for cold and damp seasons as well as for brilliantly sunny weather. The long borders are edged with dwarf white Alyssum, which is finer this year than for several seasons, and an added attraction to the wealth of bloom is the deliciously refreshing honey scent.

All the annual Chrysanthemums are particularly floriferous, and the Reading plants include many fine varieties. Godetias are also very attractive, and of these Satin-Rose, Dwarf-Pink, and Apple Blossom are pre-eminent this year. The taller varieties are not so good; they show the influence of the untoward season in their foliage. Amongst the annual Lupins many charming spikes were to be seen, and the delicacy of *Lupinus Hartwegii* Azure blue is beyond description, but many of the dwarf varieties are equally charming. *Bartonia aurea* presented a glowing appearance, and bore flowers which almost rival those at the St. John's Wort in size.

The Candytufts were over, so far as flowers are concerned; that there had been a splendid display was evident from the multitudinous heads of seed, and the long rows of plants are as level or even as though they had been trimmed.

As the tour extended, it was seen that the great majority of annuals may be relied upon to give abundance of flowers in a dull season if only they are treated intelligently, for there was a plenitude of bloom on most. Double Poppies carried masses of richly coloured flowers; Marigolds of all types, but particularly the "warf, parti-coloured Diadem and Legion of Honour, had many glowing flowers. *Eschscholtzias* on the slightest provocation pushed off their caps, revealing varied colours of velvety richness. The dainty little *Wine Nemophila insignis grandiflora* delighted the eye with its distinct colour. Dwarf *Nasturtiums* were also a great feature; this year they are every bit as floriferous as in the hottest summer, and the

colours of many of these plants are wonderfully fascinating. *Convolvulus minor*, once an indispensable annual, is, by the inevitable swing of the pendulum of fashion, again becoming very popular, and it was not surprising to find at Reading many charming varieties of this flower.

Viscarias, which have been so prominent at Covent Garden Market as pot plants, are equally charming, if not more so, in the open ground, and with the *Linums* are also valuable as cut flowers. The richness of the veining in the flowers of pot-grown *Salpiglossis* was the subject of much remark at the last Chelsea Show, and is equally prominent on the plants in Messrs. Sutton and Sons' trial plots.

Many annuals may be sown during the present month to produce a display of flowers early in the season, and there is now a wealth of beautiful subjects to select from.

Although not annuals, the seedling tuberous-rooted Begonias in the glass houses may appropriately be mentioned, for they are all seedlings and of surpassing beauty. Of the many thousands of plants, both double and single-flowered, it was difficult to find any of poor type. *Begonia Lloydii*, a type introduced in 1910, is much of *B. Wortiana* syle, and so most suitable for cultivation in hanging baskets or in pots for narrow shelves. Being seedlings, they are naturally variable, but a goodly proportion produce double flowers.

— Apple and Pear trees were badly affected by adverse weather conditions at the flowering period, and were also troubled by insect pests. Plums were also affected by insect pests. The leaves were curled in a remarkably short space of time. Early spraying was resorted to. Peaches and Nectarines had also to be sprayed to counteract leaf curl. Red Currants were heavy crops, and Black Currants of an average yield. Loganberries bore good sized fruits. Strawberries were of great promise, but continued rains when the berries were ripe spoiled the bulk of the crop. *T. J. Hartless, King's Walden Bury Gardens, Hitchin.*

— The crops of Apples, Pears, and Plums are much below our anticipation after the wealth of bloom on the trees in spring. The cause is, no doubt, the combination of an exceptionally mild winter with cold winds of April and May. Of Apples, Blenheim, Pippin, Lane's Prince Albert, and Worcester Pearmain are the most prolific varieties. Pears and Plums are just as bad, and so were Cherries, except Morellos, of which there was a fair crop. Raspberries and Strawberries have been especially good and plentiful. Small fruits generally were good. Our soil is light and shallow, and needs a good deal of manure. *James A. Paice, Aldenham Vicarage Gardens, Watford.*



FIG 59.—APPLE THE PREMIER, A NEW EARLY CULINARY VARIETY: R.H.S. AWARD OF MERIT AUGUST 24, 1920. (See p. 114.)

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 122.)

HERTFORDSHIRE.—As we had extraordinary fruit crops last season we did not expect the same results this year. There is not one fruit of Lane's Prince Albert, Cox's Orange Pippin, Blenheim Pippin, and Warner's King this season. Should there have been available time last summer, and the crops reduced to about one-third, we may have had some fruits this season; trees cannot stand the strain of continued fruiting, hence the shortage of crops. Cherries and Plums were flowering at the same time, the trees being full of blossom, but wet, cold weather prevented the distribution of the pollen. Strawberries, when in flower, were caught by a sharp frost, which spoiled a few of the central blossoms. We have had, however, a grand crop. Gooseberries were subjected to the same frost which spoiled most of the top berries. Currants, being more sheltered by their leaves, fared better. Leaf curl and aphides have been troublesome, aphids not so bad as in former years. The soil is of a light texture, resting mostly on chalk. *W. Fulford, Delrow House Gardens, Aldenham, Watford.*

— The fruit crops in this locality are very disappointing, particularly Apples, Pears, and Plums. At the blooming period the prospects were good, but the trees failed to set their flowers. This cannot be owing to frost, as we experienced practically none during that time. No doubt there will be many theories set up as to the cause of the failure. My own is that it is chiefly owing to the unusually mild weather we experienced after Christmas. The foliage and flowers in many cases developed together. After many years of close observation, I have formed the opinion that this reduces the prospect of a heavy yield of fruit in most cases. A few varieties of Apples are fairly good. King of the Pippins, Small's Admirable, Hambledon's Deux Ans, Worcester Pearmain, Belle de Fontaine, and Benoni are among the best. The only standard Plums which are really good are Monarch and Langley Bullace. Pears are generally poor. Peaches and Nectarines are very good, the trees are clean, and we have had no sign of "blister." Morello Cherries were never better. Gooseberries, Red, Black and White Currants were all excellent. Strawberries were of good quality, but it was a short season. Givon's Late Prolific has been our best variety this year. Our soil is a stiff clay. Insect pests, generally, have not been so troublesome as in most years. *Edwin Beckett, Aldenham House Gardens, Elstree.*

(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Primula Juliae (see p. 95).—I, too, first saw *Primula Juliae* at a spring show in Edinburgh, and procured a plant forthwith which was grown on in a pot, divided when sufficiently large into several pieces and planted as a clump in the rockery the next spring. It succeeded well enough to afford bits to give away, but last year the clump was reduced to a very small one, just why it would be difficult to determine, because up till then there had been an abundance of flowers and healthy growth. The plant was, with the other occupants of the rockery, top-dressed from time to time, and bits removed to allow for expansion. However, I lifted and potted a small piece this last spring, which is now a thrifty, well doing plant large enough to be divided this September and grown on for planting out next spring. The colour is not particularly pleasing, and I should not call it purple. All the same, the plant is an acquisition, and is one of the *Primulas* that lives for years here. R. P. Brotherston, Tynninghame Gardens, Prestonkirk.

Loss of Fragrance in Flowers.—I have come across a curious experience this summer. In the spring a mixture of several varieties of Sweet Peas was sown in boxes, and the seedlings when large enough were planted out. They flourished and flowered in June, but, to my dismay, the blooms were scentless! However, they were gathered as usual for table decoration, and a good second-blooming resulted. The later flowers were, to my surprise and delight, as fragrant as anyone could wish! What have plant physiologists to say to this? It is not a case of subjective delusion, as I can bring witnesses to prove both conditions. And while on the subject of loss of scent in flowers, can any of your readers inform me whether the common Musk (*Mimulus moschatus*) is to be had with the old characteristic smell? I have had the plant (but not the smell) in my garden for many years. I have tried raising it from bought seed, but the seedlings were quite scentless. Alfred O. Walker, Ullacombe Place, near Maidstone.

Clerodendron ugandense.—In your issue of the 21st ult. you publish an interesting note on *Clerodendron ugandense*. The seed was collected at Ooi, and as Ooi is in British East Africa, it is not an Uganda plant. Ooi is now to be called Kenya Colony, and is about 1,000 miles from Uganda. The same, or a similar species, does occur in Uganda, in fact throughout British East Africa and Uganda, although the British East Africa plant, including the Kew specimen, appears to be more profuse in flowering than the Uganda one. The late Sir Trevor Lawrence had a batch of seedlings from the Uganda plant some years ago. If any of these exist and are flowering, they might be compared with the Kew plant, or perhaps dried specimens could be compared, for it would be rather curious if the Uganda plant proved to have no right to the name *ugandense*. I have found this *Clerodendron* abundant, and in fact at its best, at 7,000 feet elevation in British East Africa, where morning frosts and cold, misty, November-like days are common. It thus seems likely that the plant is much hardier than is imagined. It should prove a useful summer bedding plant if strong seedlings were used. I have never seen it assume a trailing habit except at Kew. It is one of the few plants that survive bush fires in Uganda. Another prominent plant, in No. 4 house at Kew, is also given the Uganda habitat wrongly, viz. *Impatiens Oliveri*, which is a British East African plant, and although I have botanised over Uganda for several years, I have never found it there. Seeds of this *Balsam* were, I believe, sent by Mr. Mahon to Kew some years ago, and although Mahon may have despatched them from Uganda, it is pretty certain that he collected the seeds on his way through British East Africa or Kenya Colony. E. Brown, Avenue Road Cranleigh, Surrey.

SOCIETIES.

DUNDEE HORTICULTURAL

AUGUST 26, 27, and 28.—After an interval of seven years the Dundee Horticultural Society's annual exhibition was resumed at Magdalen Green, Dundee, on these dates. Favoured with superb weather throughout the entire three days, the show, from the financial point of view, was a capital success, the receipts amounting to £1,265. Lady Dorothy Hope Morley, Camperdown House, performed the opening ceremony. The show, generally, was not comparable to those held in pre-war days, which was not to be unexpected after the long spell of purely utilitarian gardening for the past five or six years.

The schedule was divided into two sections, professional and amateur, the blue ribbon in each case—the Corporation Challenge Cups—given, in the professional classes, for the best display of vegetables, 12 kinds, distinct, arranged on table space 5 ft. by 3 ft., and in the amateurs' classes for a display of 6 kinds on a table space 3 ft. by 4 ft. Undoubtedly, vegetables were the outstanding feature of the show. Mrs. W. L. BOASE, Binrock, Dundee (gr., Mr. James Beats), won the Corporation Cup with a very fine entry. Mr. F. S. WEINBERG, Seafeld Lodge, Broughty Ferry (gr., Mr. J. Marnock), with a little less inferior entry was 2nd. We missed the fine display of vegetables that used to be sent in pre-war days from Tulliehelton, Perthshire (gr., Mr. William Harper), who, at the last show, secured the premier place. The other outstanding winners in the vegetable sections included Messrs. D. BEATS, J. DICK and J. G. CLARK, whose entries earned very high praise. The best Potatoes were shown by Mr. J. H. YOUNG, Ardler, Meigle, while SEAFIELD LODGE GARDENS and BINROCK GARDENS produced the best Tomatoes.

In the pot-plant section some remarkably good specimens were forthcoming, especially from the amateurs, whose entries were more numerous, and in several cases finer in quality than those of professionals.

Cut flowers made a very meritorious display. Sweet Peas from ROUKEN VALE GARDENS, Downfield (gr., Mr. George Reid), were exquisite, and proved one of the features of the exhibition.

LORD SEMPTILL, Fintray House, Aberdeen (gr., Mr. W. Smith), followed closely, while 3rd prize was awarded to those from BINROCK. Asters were finely shown, Mr. R. KIRKWOOD, Pinegrove, won the 1st prize with a fine entry. The chief honours for 12 vases of herbaceous flowers and for 8 vases of cut annuals were deservedly awarded to Mr. BOASE. For summer-flowering Chrysanthemums the honours went easily to ROUKEN VALE. Bouquets, baskets of cut flowers and wreaths made a charming display. Miss JEAN DRUMMOND, Megginch Castle, Errol, gained chief prize for hand bouquets with an entry of striking harmony of colour. Mr. GREIG, Lintrathen Gardens, had a fine win in the class for a basket of cut flowers.

The fruit classes were not particularly well filled, the outstanding and strongest feature being Grapes. Although not so finely finished as has been seen at Dundee in pre-war days, those from ELMSLEA (gr., Mr. J. G. Clark) won the chief prizes. Mr. WILLIAM NICOLL, West Park, Dundee, had capital Peaches. Other prominent winners in this section included Mr. JAMES BEATS, Binrock; Mr. D. BEATS, Arnhall; Mr. A. GOODALL, Errol; and Mr. J. DICK, Lismore.

AMATEURS' CLASSES.

As already noted, amateurs made a very fine display in all the sections. The Corporation Challenge Cup, offered for the best display of vegetables, 6 kinds, was won by Mr. PETER DONALDSON, Station Cottage, Blackford, a little Perthshire village. The Peas and Potatoes could have been better. The specimens of Leeks and Celery were excellent. These latter were undoubtedly ahead of anything shown by the professionals. The Donaldson family have, for over a quarter of a century, followed intensive cultural methods in the same small garden

whence these fine specimens of vegetables came. Mr. D. SMITH, Marshall Street, Lochee, led for cut flowers with a fine collection, showing variety of colouring and a capital arrangement. Other names worthy of mention are Messrs. A. R. EASTON, J. DENHOLM, A. OLIPHANT, and G. REID, J. POWRIE, C. BRICKNELL, and W. PHILLIPS.

Notable features of the exhibition were the beautiful displays made by nurserymen and florists. Messrs. JAMES LAWRIE AND SONS, landscape gardeners, Blackness Nurseries, Dundee, exhibited a model rockery and Dutch garden, with old-fashioned draw-well. There were also superb displays made by, among others, Messrs. THYNE AND SON, Messrs. LAIRD AND SINCLAIR, LTD., and Messrs. D. AND W. CROLL, all of Dundee.

NORTHUMBERLAND, DURHAM, AND NEWCASTLE-ON-TYNE BOTANICAL AND HORTICULTURE.

AUGUST 31, SEPTEMBER 1 AND 2.—One of the best, if not actually the best, show of the above society, was opened under favourable weather conditions on the 31st inst., and there was a large attendance in the afternoon and evening. The outstanding feature was the vegetable classes. Not only were the entries in the open and amateur classes very numerous, the quality generally of the varied exhibits was of a high standard. To illustrate the extent of the exhibits, many of the competitors had to place their groups on the ground, practically under the stages of other exhibits. There was also a want of space in the cut flower section, although in the Sweet Pea classes exhibitors were required to stage their flowers in straight rows across a table. Hardy herbaceous borders were well represented, and there was a keen competition in all the Rose classes. There were extensive exhibits of trade groups, the principal non-competitive collection being that of Messrs. Finney's, Ltd., Newcastle, who, in addition to an extensive exhibit of Sweet Peas, showed a fine collection of Vegetables.

Messrs. Stuart and Main, Kelso, had practically a tent to themselves, and the exhibits for their special prizes in connection with the show represented no fewer than 563 entries in seven classes. In the class for four dishes of Potatoes alone there were 126 entries. A new Sweet Pea, named H. H. Lees, coloured rosy pink shading to salmon at the base, exhibited by this firm, was awarded a special medal. In the class for a group of miscellaneous plants, arranged for effect on a space of 12 ft. by 10 ft., Mr. H. H. Hilliar, Darlington, was placed first. The back of the group consisted of large plants of *Coccoloba flexuosa* and finely coloured *Dracaena Goldiana*. *Codiums* were finely coloured and gave a striking contrast to the ground-work of Asparagus and other light decorative plants. In the centre of the front were *Laelio*, *Cattleyas*, *Cypripediums*, and other Orchids in variety. Second, Messrs. Ord Bros., North Shields; third, Mr. T. Wilkinson, Newcastle.

For six Table Plants, Mr. Hilliar was placed first. Mr. W. H. Howard showed the best Ferns; second, Mr. Larke, Low Fell. In the cut flower section, the best twelve bunches of Sweet Peas, distinct varieties, were shown by Mr. W. T. Landreth, Coldstream, who had fine blooms of *Elfrida Pearson*; Mrs. T. Jones, Chorlton, King White; A. Malcom, Bolton's Cream, Hawl Mark Pink, and a distinct variety named New Cream; second, Sir Geo. Trivilton, Bart. (gardener, Mr. E. Keith), Watlington, Northumberland.

For six Bunches of Sweet Peas, distinct varieties, Mr. E. Keith won the first prize with fine vases of Tom Jones, Tangerine, Heracles, and Constance Hilton; second, Mr. W. C. Anderson, Felton.

In the class for 36 Roses, no fewer than twelve varieties, Messrs. Hugh Dickson, Ltd., Belfast, took the premier prize with fine blooms of Hugh Dickson Molly Bleigh, Mdme. Malpus Gorgeous, Nelly Parker, Mrs. G. Merriott, and J. G. Gosford; second, Mr. T. Park, Bedale, Yorks. Messrs. Hugh Dickson, Ltd., also excelled in the

class for twenty-four Roses, not fewer than six varieties; 2nd, Mr. T. Park; and also for twelve Roses, six varieties, Mr. T. Park again following. This gentleman won in the class for twelve Roses (Teas), six varieties, in which Messrs. Farbridge and Jewett, Riding Mill, were placed second. In a class for twelve Roses, not fewer than six varieties, restricted to gardeners in Northumberland and Durham, Mr. W. E. Anderson, gr. to Sir James Knott, Close House, Wylam, was first, and Mr. Larke, Low Fell, second. For twelve bunches of herbaceous flowers (distinct kinds), the first prize was awarded to Messrs. Harkness and Sons, Bedale; second, Sir J. Knott (gr., Mr. W. E. Anderson), who won in the class for six bunches.

FRUIT.—The best collection of six dishes of fruit, distinct kinds, was shown by Mr. MacLaren, who had good bunches of Muscat of Alexandria and Black Alicante Grapes, Pine Apple Nectarines, Peach Alex. Noblesse, Brown Turkey Figs and Melon, Hero of Lockinge; second, Sir J. Knott (gr. Mr. W. E. Anderson); third, Mr. D. Black.

For four bunches of Grapes, in two varieties, Mr. W. E. Anderson was placed first for well finished bunches of Bowood Muscat, Muscat of Alexandria, Black Hamburg, and Gros Maroc. This exhibitor also showed the best two bunches of white Grapes, with finely finished Muscat of Alexandria; 2nd, Mr. G. F. Hallett, gardener to Sir J. Graham, Bart., Carlisle; 3rd, Mr. S. Russell, Whalton.

For two bunches of black Grapes the first prize was won by Mr. W. H. Howard, Wickham, with good bunches of Black Hamburg; second, Capt. Keith, Sandhoe, Northumberland (gr., Mr. M. Lamberton); 3rd, Mr. W. E. Anderson.

Mr. G. F. Hallett showed the best Peaches; Mr. D. Black the best Nectarines; and Mr. D. Howe, the best Tomatos. Mr. W. E. Anderson excelled in the class for a collection of hardy fruit, six dishes, showing finely finished Clapp's Favourite Pears, Moor Park Apricots, Morello Cherries, London Gooseberries, Transparent Gage Plums, and Duchess of Oldenburgh Apples.

Mr. Anderson was also first in the class for six kinds of hardy fruit, and also for (a) three dishes of Dessert Apples, with Lady Sudeley, Worcester Pearmain and White Transparent; (b) three dishes of cooking Apples, with Warner's King, Lord Suffield and Lane's Prince Albert; (c) a dish of Plums.

VEGETABLES.—For a collection of six distinct kinds of Vegetables (Messrs. Sutton's prize) Mr. D. Howe, Rose Cottage, Darlington, was successful in winning the first prize; he showed fine Celery, Carrots, Leeks, and Cauliflowers; second, Mr. J. F. Hallett. For six varieties of vegetables (Messrs. E. Webb and Son's Prize) Mr. E. Keith was first and Mr. G. F. Hallett second in a similar class, in which Messrs. Finneys offered the prizes. Mr. Keith was first and Mr. R. Harding second.

Messrs. Stuart and Mein offered prizes of £4 4s., £2 2s., £1 1s., and 10s. 6d. for four dishes of Potatos. There were 126 entries. Mr. R. Forsyth, Kelso, was first; Dr. Simpson, Bradley Hall, Wylam (gr., Mr. J. Kerr), second; Mr. J. O. Quarrey, Makerstoun, third; and Mr. T. Forsyth, Kelso, fourth. The same firm offered prizes for nine Onions, in which Mr. C. Kitchener, Olney, Bucks, was first and Mr. S. Russell second.

The amateur classes were well contested and much excellent produce was staged by allotment holders and others.

NON-COMPETITIVE EXHIBITS.

The following awards were made to trade groups.—Gold Medals to Messrs. Finneys, Ltd., Messrs. Stuart and Mein, Kelso, Messrs. H. N. Ellison, West Bromwich; Messrs. Kent and Brydon, Darlington; Mr. T. A. Lawrenson, Three-Mile Bridge, Gosforth; Messrs. Mack and Miln, Darlington; Ministry of Agriculture (Bottled Fruits, etc.); Mr. W. Wells, jun., Merstham; Messrs. J. Forbes, Hawick; and Messrs. G. Gibson and Co., Bedale, Yorks. Bronze medals were awarded to Messrs. Fairlaim, Carlisle; Messrs. Ord Bros., North Shields; and Messrs. Metchie and Co., Alnwick.

ROYAL HORTICULTURAL.

SEPTEMBER 7th.—The usual fortnightly meeting was held on Tuesday last in the Vincent Square Hall, Westminster. There were many meritorious exhibits, and several novelties submitted to the Floral and Orchid Committees gained awards, but no award, except medals, was made by the Fruit and Vegetable Committee. The National Dahlia Society's annual exhibition was held in conjunction with the meeting, so that Dahlias were greatly in evidence. The outstanding feature of the show was an exhibit of Plum trees in pots, exhibited by Messrs. T. S. Rivers and Son, for which a Gold Medal was awarded.

Floral Committee.

Present: Messrs. H. B. May (chairman), Reginald Cory, S. Morris, J. Hudson, T. W. Barr, John Green, G. Reuthe, G. Harrow, J. Heal, A. Ireland, T. Stevenson, W. Howe, A. Turner, J. Dickson, C. Dixon, H. J. Jones, W. Cuthbertson, A. G. Jackson, C. E. Pearson, J. T. Bennett-Poe, W. P. Thomson, G. Paul, and E. H. Jenkins.

AWARDS.

FIRST CLASS CERTIFICATE.

Gentiana Farreri.—This Chinese species has a lax, decumbent habit forming a matlike growth and bearing, in great freedom flowers of a characteristic Gentian shape, with opal blue colour at the mouth and a few bluish violet lines in the throat, that has numerous green dots lower down. The outside of the tube is striped with purplish green on a pale green ground, and the upper part has wedge-shaped white patches. Shown by Mr. W. Wells, Merstham.

AWARDS OF MERIT.

Rose Glory of Hurst.—A variety of the dwarf Polyantha section, bearing in profusion large clusters of glowing-rose coloured blooms. Shown by Mr. E. J. Hicks.

Chrysanthemum Brilliant.—The award was made as a garden variety. The blooms are of medium size, and are of the decorative Japanese type. The colour is reddish bronze, and the undeveloped florets in the centre show a paler reverse. Exhibited by Mr. H. J. Jones.

Scabiosa Pride of Exmouth.—This beautiful variety of Scabiosa was illustrated in *Gard. Chron.*, October 4, 1919, Fig. 81. The blooms are a charming shade of lavender-blue set off by a white centre; the inflorescence measures nearly four inches across. Shown by Messrs. Godfrey and Son.

Scabiosa Diamond.—This also is a variety of *S. caucasica*, the colour being azure-violet. The disc flowers open white, and have pink stamens, which serve to throw the violet colour into greater relief. The blooms measure three inches across. Shown by Messrs. Isaac House and Son.

GROUPS.

A group of ornamental Shrubs, shown by Messrs. J. Cheal and Sons, was awarded a bronze Banksian medal. It included the best of the shrubby Spiræas, Hypericums, and Heaths, as well as Oaks and Maples, with elegant foliage.

To the left of the entrance, Messrs. Alex. Dickson and Sons, Ltd. occupied a whole table with a group of China Asters, that were of exceptional merit. Varieties of purple, blue, red, and crimson shades were very beautiful, and there were some dainty blooms of lavender and mauve tones among both double and single varieties (Silver-Gilt Flora Medal). Hardy flowers were well shown by several firms. Mr. Wells, junr., made a capital display with Delphiniums and the comparatively new Asier Amellus King George (Silver Grenfell Medal). Messrs. Whitelegg and Co. showed Delphiniums that were very good for the time of year, also Gladioli, Heleniums, and other seasonable hardy flowers (Silver Banksian Medal). Messrs. Maxwell and Beale showed hardy flowers in variety, Lavenders being a special feature of the exhibit (Bronze Banksian

Medal). Mr. G. Reuthe had a number of choice flowering shrubs, and also a selection of late flowering Alpines including Colchicums in white and coloured varieties (Silver Grenfell Medal). The Misses Hopkins were awarded a Bronze Banksian Medal for hardy flowers. Messrs. Cutchbush and Sons made a fine display of annuals, which embraced Lavateras, Calendulas, Eschscholtzias, Larkspurs, and others (Bronze Flora Medal). Mr. J. J. Kettle showed Violet Mrs. David Lloyd George. *Scabiosa caucasica* was shown in selected varieties by Messrs. Isaac House and Son (Silver Banksian Medal). Mr. W. J. Godfrey also showed his fine variety of *Scabiosa caucasica*, named Pride of Exmouth (Bronze Grenfell Medal). Messrs. W. Arthingdale and Son won the cup offered for Gladioli with a collection that well merited the award. Messrs. Barr and Sons were also exhibitors of Gladioli, and their stand contained a fine mass of the waxy white flowers of *Watsonia Ardernei* (Silver Grenfell Medal). A Bronze Flora Medal was awarded to Messrs. K. Veleuxs, Hillegom, Holland, for Gladioli.

Messrs. Carter, Page, and Co. made good use of Phloxes as a background to an exhibit in which garden Dahlias played an important part. Some of the large Paeony-flowered blooms were very striking, and there were some refined Cactus and Collarette sorts (Silver Flora Medal). Messrs. J. Cheal and Sons also exhibited Dahlias. Their collection included all sections of the flower, and the varieties were all of outstanding merit (Silver Banksian Medal). Dahlias were also shown by Mr. C. Turner (Silver Banksian Medal) and Mr. J. T. West (Silver Grenfell Medal). Early flowering Chrysanthemums were well shown by Messrs. W. Wells and Co. Messrs. Allwood Bros. made a display of Perpetual flowering Carnations and the new hybrid *Dianthus Allwoodii* (Silver Banksian Medal).

Exhibits of Roses were made by Messrs. W. Paul and Son (Bronze Flora Medal); Mr. E. J. Hicks (Bronze Flora Medal); and Rev. F. Emberton (Silver Grenfell Medal).

Mr. L. R. Russell again displayed a collection of choice stove and greenhouse plants, for which a Silver Grenfell Medal was awarded.

Fruit and Vegetable Committee.

Present: Messrs. C. G. A. Nix (chairman), S. B. Dicks, P. C. M. Veitch, G. F. Tinley, A. Bullock, H. S. Rivers, J. C. Allgrove, H. Markham, W. H. Divers, W. Wilks, Geo. Kelt, and A. W. Metcalfe.

Cultural Commendation.

This award was made to Messrs. H. Chapman, Ltd., for splendid fruits of Apple St. Everard, one of the best early dessert varieties.

GROUPS.

Messrs. T. Rivers and Son exhibited some thirty pot Plum trees, with dwarfier plants of Figs as a ground work. The Plums were some of the finest examples of pot fruit trees we have seen, and the most prolific fruited; each plant was a model specimen, and crowded with ripe fruits. The varieties were Coe's Golden Drop, President, Reine Claude de Bayx, Rivers' Late Orange, Monarch, and President (Gold Medal). Messrs. G. G. Whitelegg and Co. showed thirty dishes of Apples, Pears, and Plums for which a Silver Banksian Medal was awarded. There were choice specimens of Apples, New Hawthornden, Tyler's Kernel Worcester Pearmain, Rev. W. Wilks' of Pears, Louise Bonne of Jersey and Doyenné Boussoch, and of Plums, Emperor, Transparent Gage, and Count Althann's Gage.

LEIGH-ON-SEA, ESSEX. VACANT LAND CULTIVATION SOCIETY (secretary, M. J. Salisbury) exhibited good Vegetables grown on allotments and a few bottled fruits, for which a Silver Banksian Medal was awarded.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Arthur Dye, Walter

Cobb, R. A. Rolfe, E. R. Ashton, J. E. Shill, Fred K. Sander, S. W. Flory, T. Armstrong, A. McBean, Frederick J. Hanbury, Stuart H. Low and W. J. Kaye.

AWARDS.

FIRST-CLASS CERTIFICATE.

Brasso-Cattleya Nene var. grandis (B.-C. *Mad. Chas. Maron* × *C. Dowiana aurea*), from Messrs. STUART LOW AND CO. The finest and by far the largest form of the beautiful B.-C. *Nene*. The gigantic flowers are soft rosy mauve with a pale yellow disc to the broad, fringed lip. The flower is very fragrant.

AWARDS OF MERIT.

Brasso-Cattleya Maroniris var. Canary (B.-C. *Mad. Chas. Maron* × *C. Iris*), from THE DUKE OF MARLBOROUGH (Orchid grower, Mr. Barker). A model flower, broad in all its parts, and of delicate colour. The sepals and petals are clear canary-yellow, the broad, fringed lip rose-pink in front and with dark-yellow disc.

Cattleya Abekeniae (*Dowiana* × *Lord Rothschild*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). A distinct form which may be likened to a yellow *C. Lord Rothschild*, being of the same fine form and substance. The sepals and petals are light yellow, the broad lip having a darker yellow disc and light-purple front.

Brasso-Cattleya Lisette (B.-C. *Digbyano Warneri* × *C. Dowiana aurea*), from W. R. FASEY, Esq. One of the darkest *Brasso-Cattleyas* and good in all respects. The flowers are violet-purple with light base and centre to the lip.

CULTURAL COMMENDATION.

To Messrs. ARMSTRONG AND BROWN, for a noble plant of *Cattleya Iris Majestica*; a very handsome form, with two spikes of seven and six flowers respectively.

OTHER EXHIBITS.

THE DUKE OF MARLBOROUGH, Blenheim, Woodstock (Orchid grower, Mr. J. T. Barker), was awarded a Silver-gilt Flora Medal for a handsome group of over one hundred specimens raised at Blenheim, and occupying a stage-space with twenty feet frontage. The specimens were principally *Cattleyas* and *Laelio-Cattleyas*, set off with graceful Palms. Noteworthy novelties were *Laelio-Cattleya Mrs. T. Ward* (*Hiawatha* × *Lustre*), in which the *C. Warneri* in L.-C. *Hiawatha* effectively appears, giving a large rosy-mauve flower with broad, purple lip; *Brasso-Cattleya Maroniris* in variety, the form splendens, with its large mauve flowers, being quite different from the var. *Canary*; and forms of L.-C. *Soulange* which bore five and six flowers on a spike.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a fine group in which their hybrid *Cattleyas*, *Laelio-Cattleyas* and *Odontoglossums* were well represented, the yellow forms being specially fine and varied. Several forms of *Laelio-Cattleya Golden Wren* (*C. iridescens* × *L.-C. Thyone*) were very pretty and dissimilar, the one named *aurea* having a five-flowered spike of rich orange flowers with crimson front to the lip; the var. *Thyone* is different in shape, and formed like L.-C. *Thyone*, with a rich crimson front to the lip. *Sophro-Cattleya Atalanta* (*S.-C. Ariadne* × *C. Fabia*), of remarkable dark colour, is the best of this section raised and shown by this firm.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for a group in which their snow-white *Xanthotes* forms of *Odontoglossum crispum* and *eximium*, arranged with darkly-coloured *Odontoglossums* and scarlet *Odontiodas*, were very attractive. Among the *Cattleyas* the new *C. Nagoya* (*Warscewiczii* × *Elolina*), a grand flower partaking mostly of *C. Warscewiczii* *C. Desdenona* (*Fabia* × *Thurgoodiana*), a very handsome mauve flower with purple front to the lip, which tells plainly of the *C. Hardyana* in its ancestry.

Messrs. STUART LOW AND CO. received a Silver Flora Medal for a pretty group of excellent, well-grown Orchids, many of which were raised at Jarvisbrook. The group embodied most of the sections flowering at this season, or standing

forms being *Laelio Sargon* (*C. Hardyana* × *L.-C. Lustre*), a grand flower in which the large size usually imparted by *C. Luddemanniana* is well demonstrated; B.-C. *Eileen* (*C. Dowiana* × B.-C. *Madame Chas. Maron*), a very large, rosy-mauve flower, with fringed lip having a yellow disc.

Messrs. J. and A. McBEAN were awarded a Silver Banksian Medal for an excellent group of good *Odontoglossums*, *Odontiodas* and other hybrids. The gem of the group was *Laelio-Cattleya Colmaniana illustris* (L.-C. *callistoglossa* × *C. Dowiana*), one of the finest-coloured *Laelio-Cattleyas*, and with a very ornate, deep-crimson lip.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), received a Silver Banksian Medal for a very interesting group of species of *Masdevallia* and *Coelogyne*, with the snow-white, pendulous *C. Veitchiana* in the centre.

Messrs. SANDER, St. Albans, were given a Vote of Thanks for an interesting group of species and hybrids.

Mrs. BISCHOFFSHEIM, The Warren House, Stanmore, showed four varieties of *Cattleya Sybil* (*Dowiana* × *iridescens*), also *Cattleya Van Houtte* (*Warscewiczii* × *Lord Rothschild*).

PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower, Mr. Farnes), sent *Laelio-Cattleya Canary* (*C. Fabia* alba × *L.-C. Thyone*), a clear yellow shade, for which he had previously secured a Preliminary Commendation.

W. R. FASEY, Esq., Snaresbrook, showed a fine white form of *Cattleya Eleanor alba*, and the very handsome *Odontoglossum Gloriana* S. Edmund (*Jasper* × *crispum*).

NATIONAL DAHLIA.

SEPTEMBER 7.—The National Dahlia Society's Show, held in conjunction with the R.H.S. fortnightly meeting on Tuesday last, may be described as successful, although it was not equal to exhibitions in pre-war times. Messrs. STREDWICK AND SONS, St. Leonards-on-Sea, were conspicuously successful in the principal open classes. They excelled in the class for eighteen Cactus varieties, six blooms of each, showing beautifully finished blooms. They also won the Gold Medal offered for the best Cactus Dahlia in the show, with a beautiful, long petalled white variety named *Silverhill Park*; also the Silver Medal offered for second best variety with Miss Hasnip, a clear canary-yellow variety of good form. Messrs. STREDWICK also led in the class for 24 Cactus varieties, distinct; the blooms of Miss Hasnip, Satisfaction, Peerless Emperor and Miss Stredwick were very choice specimens. Mr. H. WOOLMAN was second in this class.

For 12 Cactus varieties, Mr. H. WOOLMAN was awarded the 1st prize, with F. Wenham, H. Crabtree, Bizarre and other good varieties. The same exhibitor showed the best 6 blooms of a Cactus Dahlia, one variety, staging superb blooms of Mrs. M. Stredwick.

Mr. H. WOOLMAN, Birmingham, put up a very creditable exhibit in the class for the Cory cup, offered for a group of decorative garden Dahlias occupying 25 feet by 3 feet of tabling, no wiring or artificial support being allowed. Paony-flowered, Pompon and decorative Cactus Dahlias were well represented, but the strongest feature was the remarkably fine Collarette flowers. There being no other competitor, the cup was withheld, but Mr. WOOLMAN certainly deserved some recognition.

Messrs. J. CHEAL AND SONS excelled in the class for varieties of garden Cactus Dahlias, 6 blooms of each, with Guardian, Mauve Queen, Richard Box, Treasure and other choice sorts. In the class for 24 varieties of Pompons, 12 blooms of each, Messrs. J. CHEAL AND SONS were again successful. The varieties Adelaide, Rufus, Ideal, Regulus and Glow were some of the best in this exhibit.

AMATEURS' CLASSES.

Mr. J. A. JARRETT, 184, Anerley Road, Anerley, was very successful in the principal classes for Amateurs his exhibit of six varieties of miniature Cactus Dahlias being especially good. Coronation is a most vivid cloth-scarlet colour and must be very striking in the garden. Mr. JARRETT also won 1st prize in the class

for miniature Paony-flowered varieties. Mr. A. Brown, lanthe, Grange Road, Leagrave, Bedfordshire, staged an excellent dozen Singles, six blooms of each, which secured him the 1st prize, and he also won in the class for six varieties of Pompons. Mr. H. BROWN, Dahlia Dene, Havelock Road, Luton, won the 1st prize in the class for twelve varieties of Pompons, six blooms of each, and the same exhibitor was equally successful in that for six triplets of Collarettes; Bonfire, a glowing flame-coloured flower, was one of his best sorts.

ANSWERS TO CORRESPONDENTS.

CARROTS SPLITTING: W. B. S. You have allowed the roots to remain too long in the ground; they should have been lifted and used much earlier. The splitting is due to an excessive amount of rain following a dry spring and early summer.

GRAPE SHANKING: B. J. H. and Mrs. L. The bunches are very badly shanked, pointing to unsatisfactory condition at the roots. A check of any kind may result in shanking, but you will probably find, if you lift and examine some of the roots, that both the soil and the roots themselves are in a very unsatisfactory condition. Follow the advice given in the "Week's Work" (p. 131) on the cultivation of fruits under glass.

NAMES OF FRUITS: G. B. Beauty of Bath.—C. R. A local seedling of no merit, almost a Crab Apple.—C. G. A. We do not recognise the variety of Melon.

NAMES OF PLANTS: A. E. R. 1, *Calycanthus floridus*; 2, not recognised, send when in bloom.—G. B. 1, *Reseda lutea*; 2, *Saponaria officinalis*.—W. C. 1, *Polygonum cuspidatum*; 2, *Romneya Coulteri*; 3, *Rubus* species; 4, *Spiraea Douglasii*; 5, *Pernettya mucronata*; 6, not recognised; 7, *Rhus Cotinus*; 8, *Abelia floribunda*; 9, *Senecio Veitchianus*; 10, *Spiraea Bumalda* Anthony Waterer; 11, *Cistus ladaniferus*; 12, *Lycasteria formosa*; 13, *Olearia Haastii*; 14, *Ligustrum chinense*; 15, *Artemisia lactiflora*; 16, *Berberis* probably B. Bealei.—J. S. W. *Lycoperdon atropurpureum*.—T. M. G. *Phalaris canariensis*.—A. H. *Senecio tanguticus*.—W. and S. *Cydonia japonica*.—N. W. H. 1 and 3. Send in flower; 2, *Magnolia conspicua*; 4, *Thuya dolabrata*; 5, *Cupressus Lawsoniana*; 6, *Alnus cordifolia*. W. D. *Catalpa bignonioides*.—E. S. 1, *Manettia bicolor*; 2, *Abutilon vexillarium*; 3, *Swainsona galegifolia* alba.—F. S. *Diostea juncea*.—J. P. 1, *Hypericum patulum*; 2, *H. inodorum*; 3, *Spiraea noble* ana; 4, *Senecio Veitchianus*; 5, *Lythrum Salicaria*.—W. and S. *Escallonia langleyensis*.

POTATO HAULM DISEASED.—G. G. If the disease has caused defoliation, cut down the haulm and burn it. The crop should be lifted and stored carefully as soon as suitable weather permits. Dust the tubers with slaked lime before storing them.

RUST ON CHRYSANTHEMUM LEAVES.—M. M. The rusty condition of the leaves is due to the presence of a fungus named *Puccinia hieracii*. Remove and burn all badly infected leaves and spray the plants at brief intervals with a solution of sulphide of potassium.

SULPHATE OF ALUMINA.—S. B. Sulphate of alumina may be obtained from Messrs. Harrington Bros., Oliver's Yard, Finsbury, or Messrs. Townson and Mercer, Camomile Street, E.C., both of London, or in larger quantities from the Peter Spence Alum Works, near Manchester. The retail price before the war was 2d. per lb. It is now 4d. or 5d. per lb. at least.

Communications Received.—S. E. A.—W. M.—H. M.—D. W. C.—I. S. C.—F. G. W.—A. J. B.—J. B.—H. W.—A. D.—J. U.—P. S.—W. S. B.—F. G.—A. B.—W. P. L.—G. A. B.—C. E. P.—F. K.—R. C.—S. G.—J. M. S.—R. D.—J. W. C.—G. M.—W. K.—W. K. J.—I. L. R.—J. P.—T. M.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich 55.5°.

ACTUAL TEMPERATURE: Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, September 15, 10 a.m.: Bar. 29.8; temp. 61°. Weather—Raining.

Green Manuring.

One of the most interesting subjects discussed in the Agricultural Section of the British Association was that of green manuring. Captain Page's experiments at Wisley serving as the basis for the discussion.

The addition of organic, humus-forming materials to the soil plays a most important part in any sound scheme of manuring, and when a plentiful (and therefore cheap) supply of animal manure is available, no better source of this organic matter could be desired. But it is precisely here that we meet the crux of the whole question: a sufficient supply of animal manure is not now available. Farmyard manure is becoming scarce; there are markedly fewer cattle in this country than before the war, while on the other hand the increased acreage under the plough has still further diminished the surplus which the farmer has to dispose of. Moreover, the position will become worse if still more land is brought under the plough, as it must be if this country is to be made less dependent on imported supplies for its breadstuffs. In the past the market grower had another source of natural manure, in the stable manure which he readily obtained from the town on which he depended for his market. But the rapid ousting of the horse by the petrol engine, for which striking statistics were quoted by Captain Page, is drying up this alternative source. Thus the market grower is on the horns of a dilemma, and yet he, of all growers, is in the greatest need of organic manure, by virtue of his more intensive methods of cultivation, and

of the inherently "hungry" nature of the light early soils he specially favours.

What alternative sources of organic manure are available? Several could be mentioned, but except for green manures none is of universal practicability.

The practice of turning in green crops, with its attendant benefits, was well known to the Ancients, being mentioned, for instance by Theophrastus and also by Virgil. Despite the antiquity of the practice, it is scarcely used in this country, and little is known of its scientific principles. The results described by Captain Page at Wisley are the first fruits of a systematic and scientific attempt to discover the best methods of green manuring for the horticulturist. The crops most generally used are White Mustard, Rape, Rye, common Vetch, and crimson Clover. These all gave good results in the Wisley experiments, and brought about increases of from 75 to 200 per cent. in the Turnip crop, which was sown after the green manure crop had been dug in. Digging-in in the early spring seems to be distinctly more beneficial than in the late autumn, and for spring application Vetch and crimson Clover gave much better results than any of the non-leguminous crops.

The detailed results were rightly quoted with caution, and need not engage our attention here, as the experiment must be carried on for several years before final conclusions can be drawn; but it is satisfactory to know that a subject of such vital interest to the horticulturist is receiving expert scientific attention, and the future course of the experiments will be watched with great interest. At the same time, those who are already suffering from the difficulty of obtaining enough animal manure—and they are many—would be well advised to give serious consideration to the use of green manures in its place.

Professor J. B. Farmer.—Professor John Bretland Farmer, F.R.S., of the Imperial College of Science and Technology, has been appointed by an Order of Council to be a member of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

A Centurian Gardener.—A correspondent sends the following inscription, which he copied from an upright stone in Fulham Churchyard: "Under this stone are deposited the remains of Nathaniel Rench, late of this parish, gardener, who departed this transitory life January 18, 1783, aged 101 years. Added to this remarkable instance of longevity he enjoyed unimpaired the full powers of his faculties until a short period of time previous to his dissolution; possessing in an eminent degree the social virtues. It may justly be applied to him that an honest man is the noblest work of God."

Prices for Basic Slag.—Owing to the increase in railway rates, which came into force on September 1, 1920, the Ministry of Agriculture and Fisheries has sanctioned the increase of the agreed maximum prices for basic slag by 3s. 6d. per ton in the case of all deliveries made on or after September 1st.

A Floral City.—The inhabitants of the town of Davenport, Iowa, U.S.A., are determined to "make the whole town bloom." In response to the scheme, front gardens have, wherever possible, been made and planted; window boxes have been placed where none was before, and even the electric light standards have been crowned with flowering plants.

Scottish Railway Station Gardens.—The following station-masters on the Glasgow and South-Western Railway have been awarded first prizes of £5 each in the competition for the best-kept station gardens:—Mr. Chas. Auld,

Alloway; Mr. John Aitken, Drybridge; Mr. Wm. Nicholson, Maxwelltown; Mr. John Inglis, Dalmeilington; Mr. Jas. Dunlop, Cunninghamhead; Mr. John O'Hagan, Castle Douglas; Mr. Wm. Patterson, Glenside; Mr. Thos. Coyle, Dalbeattie; Mr. John Winthrop, Saqqahar; Mr. John Inglis, Maybole; Mr. Wm. Laurie, Carronbridge; and Mr. David Kelly, Holywood.

Proposed Scottish Diploma in Horticulture.—The adjourned meeting in connection with the above proposal was held in the Goid Hall, 5, St. Andrew Square, Edinburgh, on the 8th inst. Mr. David King, one of the vice-presidents of the Royal Caledonian Horticultural Society, was elected chairman, and there was a fair attendance of representatives of horticultural societies in Scotland, and others. Letters were read by the interim secretary, Mr. Mackie, C.A., from a number of the other Scottish horticultural societies intimating that they heartily approved of the scheme to set up a Scottish National Horticultural Association for the purpose, *inter alia*, of granting a diploma to practical gardeners.—Mr. A. D. Richardson asked if these societies had considered the financial aspect of the matter, but there seemed to be no information on the point. No motion to set up a separate organisation was put to the meeting, although it received the approval of almost all the speakers at the Glasgow meeting. On the contrary, Mr. G. M. Taylor, Edinburgh, moved that the scheme be remitted to the Council of the Royal Caledonian Horticultural Society, and this was seconded by Mr. J. Dunagan, Dunfermline, and became the unanimous finding of the meeting.—Mr. Richardson wished to know if this decision meant that the proposal to set up a separate association now went by the board, and the reply given was in the affirmative.

Association of Economic Biologists.—The next meeting of the Association of Economic Biologists will be held on Friday, the 24th inst., in the Director's office garden, Royal Botanic Gardens, Kew, by kind permission of the President. Entrance to the gardens will be by the door under the stone portico on Kew Green (S. side), near Kew Church, between 1.30 and 2.30 p.m. An extraordinary general meeting will be held at 2 p.m. to consider, on the proposition of the Council, the following change in the Laws of the Association:—Laws 4, 11 and 17, for the word "Secretary" substitute "one of the Secretaries." The general meeting will then be held, and at 2.30 p.m. a discussion will be opened on problems of Susceptibility or Immunity to Disease in Plants, the following being the principal speakers:—A. Howard, "The Relation of Soil Aeration and Soil Temperature to Disease in Plants"; E. S. Salmon, "The Relation of Climatic Factors to Disease in Plants"; F. T. Brooks, "Immunity to Disease in Plants as a Mendelian Factor."

A Gardener's Notice.—We are indebted to a correspondent for sending us the newspaper report of a case recently heard in the Redhill County Court, in which a gardener in private employment was held to be entitled only to one week's notice of dismissal. In the absence of a detailed account of the proceedings, it would be unfair to criticise the conduct of the case but, on details published, it would seem permissible to doubt whether the attention of the learned Judge was called to the reported case which would have supported the employee's contention that he was entitled at least to one month's notice. It is, of course, common knowledge, that a head gardener is entitled to one month's notice on the ground that he is a domestic servant, but it does not appear to be generally understood that, in the leading case which decided that question, the point was whether (in the absence of express agreement) a head gardener was entitled to contend that his hiring was a yearly one or whether the longer notice, which would have been thereby implied, should not be cut down to that of a monthly hiring. Decisions of a County Court are not binding on other courts, but there is danger of misconception arising if the decision given in this case be allowed to remain unchallenged. In the case now under notice, the gardener appears to have called only one witness as to custom,

* Experiments on Green Manuring of Light Soils." By Capt. H. J. Page, M.B.E., B.Sc.

while the employer called no witnesses at all on the point. Possibly the learned Judge was somewhat influenced by the employee's admission that he had been satisfied to accept a week's notice of dismissal from previous employers, but the fact that he was not aware of his legal rights would, of course, not alter the general law on the subject. The question of a "Gardener's Notice" was fully dealt with by a solicitor in the issue of March 22, 1919, p. 143, and those interested will there find the subject set out in detail.

Restoration of Belgium.—The many friends of Mr. V. Bouckenoghe in this country will be interested to know that this noted horticulturist and old Kewite, is directing his energies to the restoration of the devastated area in Belgium, particularly around Ypres. Mr. Alfred B. Melles sends us the following interesting letter from Westvleteren, Belgium:—"I have just had the pleasure of being entertained by this gentleman and his hospitable wife in their new home close by the ruins of Ypres Cathedral. Mr. Bouckenoghe is now an official under the Haut Commissaire Royal, dealing with the restoration of farm lands. I well remember military people during the war discussing what could be done with the shell-torn battlefield of Belgium when peace should come. The general opinion seemed to be that it would be impossible to bring it into cultivation again. Many, fired with thoughts of reforestation, advised that a tree should be planted in each shell-hole. Others suggested hauling heavy ploughs at safe range by tanks. And so on. But a successful solution has been found. The surface of the ground is cleared of debris and roughly levelled by hand labour, after which hand or motor ploughs bring it into a fit state for cultivation. The Government compensates tenants for the labour involved or supplies workmen to do it. A tenant is more interested in getting the work done well than anybody else can be. So if a farmer desires to have his land cleared for cultivation he is asked his opinion as to what it would cost. An official estimate is also made. When a common price has been agreed upon the farmer has the option of undertaking the work himself and receiving that sum in payment, or of waiting until State labour can be supplied to carry out the work. Mention should be made of the wonderful part played in Belgium by the metro-gauge street railway system in enabling people to live and work in parts which would otherwise be inaccessible. On the conclusion of hostilities this rail system was relaid in the devastated area with commendable promptness. A similar system would doubtless prove of enormous advantage in the rural parts of Great Britain. During a walk I went once more with Mr. Bouckenoghe over the site of his once beautiful nursery, whereon stood five acres of glass at the commencement of war, and a unique collection of Vines, Lilacs, Carnations, Richardias, and decorative plants. Everything has vanished; only by diligent search can traces of hot-water piping and brickwork be discovered. The ground is full of glass splinters, and could not easily be cultivated. To start the nursery again is impossible under existing circumstances, and until the happy day dawns when this shall be possible, we all wish Mr. Bouckenoghe success in his very important temporary duties."

Incorporation of the Scottish Horticultural Association with the Royal Caledonian Horticultural Society.—The special general meeting of the Scottish Horticultural Association, convened at Edinburgh on the 7th inst., considered the result of the poll of the members on the question as to whether the association should become incorporated in the Royal Caledonian Horticultural Society, in terms of the following resolution, which was adopted at the annual business meeting on January 20th last: "That the members of the Scottish Horticultural Association in annual general meeting assembled are of opinion that the interests of Scottish horticulture would be best served by the incorporation of the Scottish Horticultural Association with the Royal Caledonian Horticultural Society under the latter name, provided that the

Royal Caledonian Horticultural Society on its part agrees to carry out the objects contained in Article II. of the Constitution of the Scottish Horticultural Association, and any other parts of the aforesaid Constitution which may be reasonably applicable to the united body, and they instruct the council of this association to take the necessary steps to secure that end." The President (Miss Burton) presided, and over sixty members were present. The number of voting cards issued was 901, and it was intimated that the returns were: For incorporation, 396; against, 19; spoiled papers, 17. The Scottish Horticultural Association will, therefore, cease to exist as a separate organisation on January 12, 1921, and the members of it will then automatically become members of the Royal Caledonian Horticultural Society, and the funds of the association will pass into the jurisdiction of the Caledonian Society. The Scottish Association's Horticultural Institution Fund will, however, form a separate trust, and it will be administered by the council of the Royal Caledonian Society in the future. At the date of the incorporation the Scottish Horticultural Association will have almost completed forty-three years of useful work, and it will then fall to the Royal Caledonian Society to continue this work, for which its charter gives it ample powers.

Appointments in Ireland.—Mr. J. W. Besant has been appointed Assistant to the Keeper, Royal Botanic Gardens, Glasnevin, a post which has been vacant since the death of Mr. C. F. Ball in September, 1915. Mr. Besant has been on the staff at Glasnevin for over thirteen years, and was previously four and a half years in the Royal Botanic Gardens, Kew. Mr. Andrew F. Pearson has been appointed by the Commissioners of Public Works (Ireland) Assistant Superintendent of the Phoenix Park, Dublin. Mr. Pearson was formerly on the garden staff of the Chief Secretary's Lodge, and for the past eighteen years has been steward and gardener to A. F. Sharman Crawford, Esq., Lota Lodge, Glanmire, Co. Cork.

Presentation by Nursery Employees.—The employees of Mr. W. H. Page, Tangley Nurseries, Hampton, made a presentation to their employer's eldest daughter, Miss Grace Dorothy Page, on the occasion of her wedding, which took place at Hampton Parish Church, on the 7th inst. The nursery staff also decorated the interior of the church with Lilies, white Chrysanthemums and Ferns and arranged an archway of Palms at the chancel steps. Mr. W. H. Page is a popular personality in the horticultural world, and the members of his family, including his eldest daughter, are well known to those who attend the social functions of the various floricultural societies in the metropolis.

Manchester Chrysanthemum Show.—The Royal Botanical and Horticultural Society of Manchester will hold a Chrysanthemum show at the local Town Hall on November 18 and 19. The schedule includes thirty-one classes, and in addition to Chrysanthemums, prizes are offered for various other flowers including Orchids; the best trade exhibits, and a collection of British-grown fruit. The secretary is Mr. P. Weathers, Royal Botanical Gardens, Old Trafford, Manchester.

Glucose for Use in Jam-making.—In view of the scarcity and dearness of sugar the following method of utilising glucose for jam-making, given in the *Journal of the Ministry of Agriculture* for September, may be of use to readers:—"Glucose should only be used with sugar and then only up to the proportion of one-third of the quantity of the latter. The combined quantity of sugar and glucose should be equal to that of fruit when under-ripe fruit is used, with ripe fruit the quantity of glucose should be slightly less. Put the fruit into a preserving pan and add just sufficient water to break down the texture when the fruit becomes heated; ripe fruit requires less water than green fruit. Add the sugar, and stir until completely dis-

solved. Add the glucose (corn syrup) after the sugar crystals have all been dissolved. Boil rapidly, stirring briskly to prevent burning. The point at which boiling may be stopped can be ascertained by testing a little of the jam on a cold plate; if there is no sign of its becoming firm on cooling keep on the boil until a 'set' is obtained. Over-boiled jam is usually too stiff and solid, and consequently is not so appetising as when correctly boiled. When poured into jars the jam should be covered as soon as it is cold, either with waxed paper or a thin sheet of paper dipped in brandy or other spirit. The jars should then be tied down tightly with parchment paper and stored in a cool dry place."

R.H.S. Vegetable Show.—We understand that the number of entries for the Royal Horticultural Society's Vegetable Exhibition, to be held on Tuesday next in the Vincent Square Hall, Westminster, is satisfactory, although there are not so many competitors in the classes for collections as could be wished. The schedule embraces thirty-eight classes, the majority of which are for single dishes. All the committees will meet as usual, and we understand that a certain amount of space will be available for floral exhibits. An additional interest to the meeting will be the special display of early flowering Chrysanthemums, under the auspices of the National Chrysanthemum Society. At the three o'clock meeting of the fellows a lecture will be delivered by Mr. W. Cuthberton on "Potato Problems."

Appointments for the Ensuing Week.—Tuesday, September 21. — Royal Horticultural Society's committees meet. Thursday, September 23. — National Rose Society's Autumn Show; Royal Botanic Society's meet. Friday, September 24. — Carlisle Chrysanthemum Society's Show. Saturday, September 25. — Walkersburn Society's Show.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Hampton Court Palace.*—The gardens here are in excellent order; the gravel walks clean, and the grass lawns neatly mown. In the flower-beds which skirt the lawn are many of the newest annuals, such as *Lobelia ramosa*, *Viscaria oculata*, *Lupinus Hartwegii*, the different kinds of *Zinnia*, with their various shades of colour, and many other showy annuals. Among border plants in the square beds are some of the new *Petunias*, *Verbenas*, and scarlet *Pelargoniums*, together with greenhouse plants of the most free flowering kinds, and in one of the recesses of the court is a fine old *Catalpa syriacifolia*, with a few blooms in perfection out of the many produced this season. We also observed in one of the borders a good collection of *Phloxes*, comprising *P. Van Houttei*, and a number of beautiful hybrids. It may also be worthy of notice that, by way of experiment, two beds have been planted with *Veronica speciosa* and *Rosa Devonensis*, for late flowering; the former looked very healthy. In some of the recently-formed shrubberies, which are planted with shrubs of the best kinds, were *Spiraea Lindleyana*, and two young plants in good health of *Paulownia imperialis*. In the private garden on the walk leading to the Vinery was the collection of fine old Orange trees, which, being arranged on each side of the walk, had a very pleasing effect. The Vinery, containing the large Vine, is 70 feet in length and 14 in width; the Vine, which is loaded with fruit, is the admiration of everybody. It cannot have less than 1,400 bunches of Grapes on it at the present time, and the crop is estimated to weigh about 11 cwt.; we were informed that the longest branch extends 110 feet, and that the stem at three feet from the ground measures from 27 to 28 inches in circumference. The fruit is very regularly dispersed over the house, the best bunches being at the extremities of the long shoots. In conclusion, it may be mentioned to the credit of the thousands of people of all classes who annually visit the gardens here, that little or no damage is ever done to the flowers or shrubs.—*W. S., Gard. Chron., Sept. 20, 1845.*

THE ROSARY.

CLIMBING ROSES.

THE article by *White Rose* on page 108, on "Climbing Roses in August" is interesting and instructive to those who wish to form a collection or add to an existing one. The variety *Ethel* is with me a bad grower, making short shoots that are liable to mildew, whilst the leaves exhibit an exceptional deficiency of chlorophyll, that I almost despair of its existence much longer: in the colour of its blossoms it is charming. *Coquina* I discarded long ago on account of its blossoms refusing to develop fully; the individual flowers failed to expand properly. Under glass this variety is a delightful Rose.

Lady Gay, in the formation of its flower panicles, differs from *Dorothy Perkins* in that the blossoms are set wider apart, are individually larger and the colour is cherry pink, instead of a lighter tint as in *Dorothy Perkins*. If anything, *Lady Gay* is stouter in growth. When *Lady Gay* is grown in a northern aspect the difference in colour is quite pronounced.

In the case of *Dorothy Dennison* I find it grows more vigorously than either *Christian Curie* or *Lady Godiva*, and, as a weeping standard, I look upon *Dorothy Dennison* as an ideal plant. The colour is retained in its warmth of pink longer than in the other two varieties, whilst for freedom of growth and flower I know of none superior. If *White Rose* would grow *Mrs. Littleton Dewhurst*, a sport from *Lady Gay* sent out by Messrs. J. R. Pearson and Sons, he would not retain *White Dorothy* in the premier place. The *Lady Gay* sport is more profuse in its flowering, the blooms are not so "streaky" in colour and are more freely produced, while the growth is superior. I regard this variety as the finest white flowering climber we have. *Sander's White* is distinctly a purer white; in fact, it is emphatically purer than any other variety, but it has the objectionable habit of the centre bloom in each truss turning brown so quickly as to disfigure the whole panicle, unless one has time to pick off the dead petals. I like the individual blossoms of *Mrs. Walsh*, which are pure white and last fresh for a long time, but the habit of growth is "miffy" in the ordinary way and so liable to mildew that it is discouraging. Trained up a straight pole, not pruning severely, but allowing the new growths to droop as it does naturally, an attractive mass is produced especially if the roots are well supplied with manurial stimulant. For two years I have been pleased with *Paul's Scarlet Climber* in the way it continues to flower. I recommend it to all my friends, as I am sure they will all appreciate the brightness it produces in the garden.

If *White Rose* has not tried *Edgar Andrieux* as an August flowering variety I would advise him to do so. The colour—blood red changing to crimson—is now, at the end of August, an attraction. *Catherine Guillot* is giving the best second crop of blossom of any variety, after flowering very profusely in July. When fully developed the blooms are pure white; the growth is especially vigorous.

Sodania is an August flowering climber that deserves more attention: some object to the colour—brilliant carmine. In growth and freedom it is excellent. *E. Molyneux*.

DWARF POLYANTHA ROSES.

THE dwarf Polyantha Roses are exceedingly floriferous and very suitable for use as edgings to Rose beds and borders, for cultivation as decorative pot plants and for many other purposes. There are several good varieties, of which *Orleans Rose*, vivid rosy crimson, is probably the finest. *Mrs. W. H. Cutbush* is still one of the best pink sorts, and the habit and growth is somewhat similar to that of *Orleans Rose*. The variety *Jeanne d'Arc* has milk-white blossoms which open in all weathers. The growth of this variety is very free and compact, making a plant about twelve inches tall.

The new variety, *Glory of Hurst* (see Fig. 60) which received the R.H.S. Award of Merit on the 7th inst., is somewhat similar in habit to *Orleans Rose* from which it was raised, the other parent being *Jessie*. The raiser, Mr. Hicks, informs us that the height is from twelve to eighteen inches, and he describes the colour as bright

cherry-crimson, stating that it never fades to purple.

Other good Polyantha varieties include *Perle Orleanaise*, a bright cherry red variety; *Yvonne Rabier*, a good white variety, with blooms most pleasingly perfumed and one that makes good growth, but, unfortunately, the blooms are often spoiled in the open by rains.

Including the new *Glory of Hurst*, the best dozen Polyanthas for bedding purposes are:—*Orleans Rose*, *Jessie*, *Jeanne d'Arc*, *Katherine Zeimet*, *Léonie Lamesch*, *Canarienvogel*, *Perle d'Or*, *Cécile Brunner*, *Mme. Jules Gouchault*, *Maman Turbat* and *Mrs. W. H. Cutbush*.

MILDEW.

MILDEW is very troublesome on Roses in late summer. Half an ounce of potassium sulphide

THE BULB GARDEN.

HYBRIDS OF GLADIOLUS PRIMULINUS.

YOUR warning on p. 105 of a possibility of a host of too-much-alike varieties of the above appearing on the market does not come too soon. My list, which must be far from complete, already contains 170 names. Of these I have tried over one hundred. A very small proportion failed to respond to my care of them, and refused to appear above the ground. Others turned out to be freaks pure and simple. In one case I think it was described as "curious." Then, again, there were others which only dif-

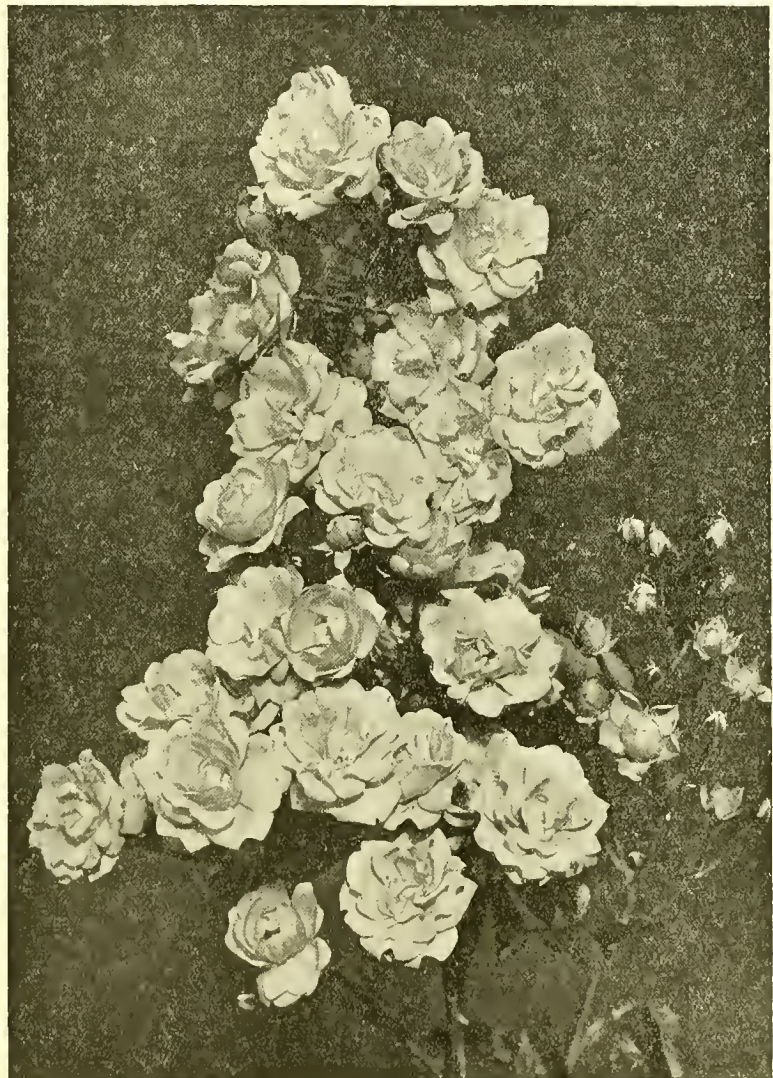


FIG. 60.—ROSE GLORY OF HURST; A NEW DWARF POLYANTHA VARIETY.
(R.H.S. Award of Merit, September 7, 1920.)

dissolved in one gallon of water is an effective specific. It is imperative to spray the under side of the leaves as well as their upper surfaces. The following is a list of good bedding Roses which I find practically mildew resisting:—*The Queen Alexandra*, *President Bouche*, *Bayon d'Or*, *Covent Garden*, *Golden Emblem* and *Louise Catherine Breshu*. Five popular varieties, namely, *Madame Edouard Herriot*, *Flame of Fire*, *Mrs. Wemyss Quinn*, *Gorgeons* and *Golden Ophelia* all appear to gain in vigour each succeeding season and are easily kept free from mildew. Unfortunately, mildew resisting varieties are not immune to attacks of rust. *Sidney Legg*.

ferred in name. Yet again, some were no better than my own raised seedlings which I had discarded. A notable instance of this was my own No. 169 and *Van Limburg Stirum*. No. 169 was marked with a "D" last year, but notwithstanding this, they were placed with those to be saved and were also replanted this year. I was thus able to compare the two flowers, and not to condemn on mere recollection. The two flowers illustrated on page 105 were very early (30.6 and 2.7 respectively) with me, and two other Dutch flowers which took my fancy were *De Wet* (20.7), a mid season variety, and *Fire Queen*, which is just over. A series of trials is much needed. *G. C.*

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Violets.—Frames should be prepared in readiness for the reception of Violets. Place a quantity of long stable litter and leaves in the frame and tread these materials firmly; then cover them with about nine inches depth of soil in which to plant the roots. When making the beds, allow for the manure and soil sinking, which will vary according to the pressure applied in treading and the depth. Supply water to the roots 24 hours before lifting the plants, and again immediately after they are planted. Plant firmly and spray the plants twice daily, using sufficient soot to discolour the water. The lights will not be needed for some few weeks to come, and should never be closed entirely.

Border Carnations.—Where the autumn planting of Carnation layers is not practised, let there be no delay in placing the layers in three-inch pots previous to arranging them in a cold frame on an ash base. The lights should only be used to exclude frost, snow, and thick fogs. In the case of severe frosts, cover the lights with mats, but do not entirely close them. Certain varieties produce thin leafage; a few layers of these may be left in the border, and will provide a fine display of blooms next year. The old variety Raby Castle is well deserving of this treatment.

Verbascum Harkness Hybrid.—This pure yellow Mullein is well worth growing. The plants are making a pleasing display at Warter Priory at the present time. They are arranged sparingly in a large scheme of pink and mauve flowers, and run out towards the woodlands in increasing numbers, where they contrast splendidly with purple-leaved Prunus and Hazel. For the purpose of delaying the time of flowering, seed is sown in boxes at the end of September, the seedlings potted into four-inch pots, wintered in cold frames and planted out early in April.

Azalea.—Supply diluted liquid manure from the farmyard to beds of deciduous and evergreen Azaleas; this will assist the plants in the complete formation of their buds for flowering next year. The materials of mulchings spread over the roots in summer should be stirred lightly into the soil with a fork at this season. If red spider be present, prompt measures should be taken to eradicate the pest—especially in the case of evergreen varieties.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Turnips.—Owing to the dull, damp weather late Turnips are making excellent growth, and the August sown crops are sufficiently forward to receive their final thinning to nine inches apart. After thinning dust the plants with soot, and use the Dutch-hoe between the rows. Turnips from previous sowings should, as they reach a suitable size, be lifted and stored in the manner advised for Carrots in my remarks last week, except that these roots should be placed at the foot of a north wall, and provision made to keep excessive rains from them.

Brussels Sprouts.—If a few of the lower leaves are removed from the earliest plants of Brussels Sprouts at this time, it will cause the bottom buttons to swell satisfactorily. Plants of successive batches should be staked and tied where support is needed, and the ground about them kept clear of weeds.

Intercropping Between Peas.—Where Cauliflowers and other greens have been planted between Peas, the sticks and haulms should be removed as soon as the Peas are gathered, so that the intervening crops may benefit by unre-

stricted exposure to light and air. Leave the ground tidy by half-spading it, and bury the roots of the Peas, as these will add nitrogen to the soil. Cauliflowers showing signs of forming heads should have the leaves bent or tied over the centres, to ensure the curds keeping white.

Late Peas.—Late Peas should not be allowed to suffer from drought; when moisture is necessary thoroughly soak the rows with manure water, choosing a fine morning for the purpose. It is not an uncommon occurrence at this time of the year for tits and other small birds to attack the pods and destroy the crop. Netting the rows will give protection from these pests, or the birds may be caught with traps.

Mustard and Cress.—Sowings of these salads should now be made in boxes, for if sown out of doors the results may not be satisfactory. A shallow layer of fine loam should be pressed level and watered, and the seed sown evenly on the surface. Cover the box with a slate or piece of paper, as this ensures an even germination of the seed, but expose the seedlings to the full light immediately they appear.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Orchard House Trees.—Fruit trees in pots which have been stood in the open have received the benefit of cool nights, and, provided the foliage is still hanging, the buds will now be safe. A mass of rootlets being essential to success, water should be given in sufficient quantity to prevent an unduly dry condition of the soil. The above remarks apply to Peaches and Cherries, also early and mid-season Plums, which cannot be kept too cool. Insect pests must be kept vigorously in check, and washing the trees with the hose occasionally will keep them under. The fruits of Coe's Golden Drop and other late Plums grown in a special house will now be in perfection and worthy of the greatest care. Wasps and flies are often troublesome, and nothing short of covering the fruits with wasp-proof netting will keep these pests out of the house. A free circulation of dry air is essential, therefore the ventilators and doors should be kept open. Coe's Golden Drop Plum improves in quality after it is ripe, therefore the roots should be kept moderately moist to prevent the fruits from shrinking too much.

Pines.—Summer-fruiters will, by this time, have been disposed of; the general stock of plants and suckers remain to be dealt with. The earliest plants now approaching their season of rest should not be disturbed more than is necessary, as the slightest movement of the plunging material will revive the heat, which, in order to ensure the plants a complete rest, should decline to about 75°. With a mild bottom heat and the plants plunged to their rims, watering, provided the tan contains a fair amount of moisture, should be very light. A moist plunging bed is preferable to direct watering, therefore a little tepid water may be poured around the pots to prevent the roots from becoming too dry. The night temperature throughout this period of rest should be allowed to decline to 60° as a minimum and 70° on bright days, with little atmospheric moisture in the house. Plants for successional fruiting may be kept growing actively a short time longer, but a certain amount of rest being essential, the house should be freely ventilated on fine days, the plants watered only when necessary, and gradually brought to a state of rest. Suckers still in pits should soon be removed to their winter quarters, where fire-heat is available. The temperature of the bed and the house need not exceed that in the pits, but the removal of the plants to a house in which the temperature will not fluctuate is now desirable. Very late suckers recently detached may still be grown in a bottom heat of 80°. If the soil be very dry, give the plants one watering and keep the pit fairly close; a very light syringing amongst the plants on bright days will be beneficial.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Epiphrontis Veitchii.—This is a pretty bigeneric hybrid between *Sophrontis grandiflora*, and *Epidendrum radicans*, and is best described as a dwarf form of the latter. Now that the plants have passed the flowering stage, repotting may be done. It is best to thoroughly overhaul the plants, shake out all the old soil, and cut the stems back to living roots. Pots or pans should be filled two-thirds of their depth with drainage material. The compost should consist of fibrous-peat, Sphagnum-moss and partly decayed leaves in equal parts, with a moderate sprinkling of crushed charcoal intermixed. Several growths should be placed in one pot, and it will be necessary to give the shoots some support. Arrange the plants near the roof-glass of the Cattleya house, and never allow the roots to become dry. As in the case of the *Epidendrum* parent side growths are produced, and these may be used for propagating purposes. This plant is often attacked with the black spot disease, due, I believe, to a close, moist atmosphere, specially during the winter, when the temperature is liable to drop below normal.

Shading.—As the autumn advances, it will be advisable to gradually expose the plants to full sunlight. Permanent shading should be removed forthwith, taking care that the mixture used for shading is excluded from the rain-water tanks. Blinds on the north side of the houses will rarely be needed, but the remainder may be required for a few hours each day during the next few weeks. This, however, will depend largely upon the district. Much thought and discretion are necessary at this season regarding shade; for instance, *Phalaenopsis*, *Angraecums*, *Cypripediums*, *Masdevallias*, and *Odontoglossums* may soon be injured by exposing them suddenly to full sunlight; while *Cattleyas*, *Dendrobiums*, *Catasetums*, *Laelio-Cattleyas*, and similar Orchids will enjoy the extra sunshine. Mexican *Laelias*, which are producing their flower-spikes, need all the light available, and plenty of ventilation during the early part of the day when the weather is favourable. Close attention must also be given to damping and syringing; the amount of moisture necessary will depend on the district, and no hard and fast rules can be laid down. Where the houses are naturally dry, more moisture will be needed, and the floors and stages may need damping about twice each day. The nights are longer, and much cooler than hitherto, and a little warmth from the hot-water pipes will be beneficial to the plants, especially in the cool houses; where fire-heat is used a little ventilation may be permitted throughout the night. Some of the plants will need less moisture at the roots than hitherto, but others, with their pseudo-bulbs partly developed, still require liberal supplies until they are matured, for at this stage root action is most vigorous.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nole, Codicote, Welwyn, Hertfordshire

Hardy Vines.—Vines growing on walls in the open require attention in pinching off the laterals as previously described. A few laterals near the top may be allowed to grow unchecked to encourage root action. By this date the stoning period will have been passed, and the vines will need a stimulant to help them to mature their crop. An application of a reliable vine manure should be given according to the maker's instructions. Failing this, liquid manure obtained from the draining of manure heaps will greatly assist the vines at this stage. But whichever manure is used it should be thoroughly watered in to obtain the best results.

Pears.—These fruits are developing rapidly, and especially those on wall trees. It will be advisable to support the best fruits by tying matting around the stalk, and fastening it either to the trellis or branch. Some of the fruits this

year, for example those of Pitmaston Duchess, Chas. Ernest, Durondeau, and Beurré Alex. Lucas, will be of a large size, and because of their weight they are liable to drop before they are fully matured. The fruits should be exposed to the sun as much as possible; any leaves that prevent the sun rays from reaching them should be removed or placed on one side. Afford water to the roots if necessary, for Pear trees should never be allowed to become excessively dry at the roots, as this will sometimes cause the fruits to fall prematurely. Birds are sometimes troublesome, especially in dry seasons, therefore nets should be hung over the trees for protection. Keep the soil stirred frequently by the use of the hoe, and where the borders have been mulched with manure, raise the material with a fork.

Gathering of Various Fruits.—This work will require almost daily attention. Peaches and Nectarines should be gathered when dry and placed in the fruit room until they are required. Pears should be examined frequently, and fruits that part freely from the tree gathered. By this method Pears may be had over a longer period. Early Apples are best used direct from the tree. Late Apples are often gathered before they are fully matured with the result that they shrivel, and do not keep well.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Tritonia crocata.—There are several named varieties of this plant—*Alberta pallida*, Brilliant, Avalanche, etc. It is a S. African bulbous plant worthy of more general cultivation, and is easily cultivated in a cool house. The plants increase and flower freely, and have the merit of lasting longer in bloom than many such subjects. The flowers are in varying shades of orange-yellow, and are very beautiful for house decoration. The plants should be potted at this date, putting eight to a dozen roots in a 48-sized pot. They will grow well in a cold frame from which frost is excluded, until such time as their flower spikes appear, when they may be removed to a cool greenhouse.

Schizostylis coccinea.—This plant is known as the Crimson Flag or Kaffir Lily. Specimens put out in the reserve garden, as advised in a former calendar, are throwing up their flowering shoots, and some time during this month they should be lifted and placed in suitable-sized pots. The roots should be well watered and the plants stood in a cold frame, which should be kept closed for a few days. The various *Schizostylis* are very useful either for conservatory decoration or for supplying cut blooms.

Antirrhinums.—Snapdragons are splendid subjects for the embellishment of the conservatory during the spring, and prove very popular flowers in their many charming colours. Where grown for this purpose seed should be sown during the present month; many cultivators rely on July sowings made out of doors for this purpose, lifting the young plants and potting them during the autumn. By this method earlier flowering is ensured, but in the neighbourhood of London and other large towns these early plants, owing to lack of light, fail to develop their flowers satisfactorily. The plants should be grown in cold frames during the winter and given plenty of fresh air on every possible occasion. Varieties of the intermediate section are best for this purpose.

Sweet Peas.—Where Sweet Peas are grown in pots or tubs for conservatory decoration the seed should be sown towards the end of the present month or beginning of October. Four or five seeds should be placed in a large 60 or 43-sized pot and germinated in a cold frame. The pans should be shaded until the seedlings appear. Dress the seeds with red lead, or in some other way guard against attacks of mice. During winter afford the seedlings plenty of air and remove the lights on all favourable occasions to keep the plants sturdy.

ORCHID NOTES AND GLEANINGS.

LAELIA MONOPHYLLA.

This charming small scarlet-flowered species, native of the highlands of Jamaica, is annually shown from his London collection of rare species by H. T. Pitt, Esq., who at the last meeting of the Royal Horticultural Society presented a pretty specimen in fine health, with seventeen flowers. The plant passed into his possession over twenty years ago, and has since grown suspended in a cool house. It is kept moist all the year round, and not subjected to the drying-off process accorded to the more robust Brazilian species, as this frail upland plant, which grows wild in the region of Mosses and Filmy Ferns would, as it has done in most other gardens, fail to survive such treatment. Although classified botanically as a *Laelia*, its island habits, taking it away from all the other mainland species, frail habit, and some other characters, seem to place it apart from others of the genus, a point strengthened by the fact that no hybrids with it are recorded, although Messrs. Charlesworth and Messrs. Armstrong and Brown have made several attempts to hybridise with it.

CIRRHOPE TALUM FASCINATOR.

This very singular and pretty species, imported from Aunam by Messrs. Sanders, is often confounded with *C. appendiculatum*, both having the same, generally one-flowered, elongated inflorescence, the cream-white flower being quaintly marked with dark purple. A good opportunity to compare them was afforded at the meeting of the Royal Horticultural Society on September 7, when Mr. H. T. Pitt showed *C. appendiculatum*, and Messrs. Armstrong and Brown the true *C. fascinator*, which has broader and much finer flowers, and is more heavily marked with claret purple than the other species. The flower is six inches in length, the dorsal sepals and petals decorated with a dark purple fringe. Both species are pretty, but *C. fascinator* is much the more ornate.

RESTING DENDROBIUMS.

Dendrobium Phalaenopsis is sending up its flower spikes from the current season's pseudobulbs. A moderate supply of water will be needed until the scapes are removed when the plants may have a long and decided rest in a temperature of 60°. Other *Dendrobiums* that may be rested in similar conditions are *D. Dearii*, *D. Parishii*, *D. Lowii*, *D. Bensonae*, *D. formosum giganteum*, and *D. aggregatum*. *B.*



FIG. 61.—CORNER OF THE LAWN AT "THE WILDERNESS," CROYDON, THE RESIDENCE OF THE REV. W. WILKS. (See p. 144.)

NEW HYBRIDS.

(Continued from July 17, p. 31.)

Name.	Parentage.	Exhibitor.
Brasso-Laelio-Cattleya Blenheim Orange	B.-L.-C. Roweana x C. Dowiana aurea ...	Duke of Marlborough.
Cattleya Desdemona ...	Fabia x Thuregoodiana ...	Charlesworth & Co.
Cattleya Diana ...	Dowiana x Sybil ...	Hassall & Co.
Cattleya Holiodor ...	Iridocens x Venus ...	Baron Schroder.
Cattleya Hesperus ...	Hardyana x Enid ...	Baron Schroder.
Cattleya Muriel ...	Murillo x O'Brieniana alba ...	A. J. Hollington, Esq.
Cattleya Nagoya ...	Warszewiczii x Elvina ...	Charlesworth & Co.
Cattleya Orpheus ...	Brossii x Hardyana ...	F. J. Hanbury, Esq.
Laelio-Cattleya Bombardier ...	C. Adula x L.-C. Geo. Woodhams ...	W. R. Facey, Esq.
Laelio-Cattleya Butleri ...	L.-C. G. G. Whitelegge x C. Hardyana ...	W. Waters Butler, Esq.
Laelio-Cattleya Cremona ...	C. Suzanne H. de Crom x L.-C. Ophir ...	Duke of Marlborough.
Laelio-Cattleya Enchantress ...	C. Rex x L.-C. blotcheyensis ...	Sanders.
Laelio-Cattleya Glory ...	C. fulve-cens x L.-C. Thyone ...	Charlesworth & Co.
Laelio-Cattleya Hybo ...	C. Mrs. Frank Hurdell x L.-C. Bola ...	Duke of Marlborough.
Laelio-Cattleya Mrs. T. Ward ...	Hiawatha x Lustre ...	Cowan & Co.
Odontioda Laura ...	Brewii x Coronation ...	G. W. Bird, Esq.
Odontioda Rufus ...	Oda, beechensis x Odm crispum ...	R. G. Thwaites, Esq.
Odontioda Siskin ...	Charlesworthii x Sanderac ...	G. W. Bird, Esq.
Odontioda Vesper ...	Unrecorded ...	R. G. Thwaites, Esq.
Odontoglossum O'Brienianum ...	Harrycanum hybrid x Thompsonianum ...	W. R. Facey, Esq.
Odontoglossum Wivifred ...	Illustrissimum x Rosella ...	Charlesworth & Co.
Odontonia Bedfordiana ...	M. Brouana x Odm. amabile ...	Charlesworth & Co.
Vuystekeara Brewii ...	Oda, Brewii x M. vexillaria ...	Sanders.
Vuystekeara Mrs. Pitt ...	Odontonia Laelia Sander x Oda. Charlesworthii ...	

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THE REV. W. WILKS' GARDEN.

IN *Gard. Chron.*, January 18, 1913, we published an account of the Rev. W. Wilks' new residence and garden at The Wilderness, Croydon, which he acquired on resigning the living of Shirley. A photograph showed Mr. Wilks with spade and barrow busy in the "wilderness"—for such, in fact, it was then, being merely rough common or grass land—converting it into a garden of his taste.

Knowing that such a noted horticulturist as Mr. Wilks would express originality in his idea of a garden, we gladly accepted an invitation to visit "The Wilderness" this summer, and our journey was made at the end of August. True to our expectations, we found a most beautiful pleasure laid out and planted on unorthodox lines, but embodying the true features of a natural garden. The site is aptly chosen, for the garden is bordered all round with woodland (see Fig. 63), and, standing on the small lawn in front of the house (Fig. 61), which is practically the only dressed part of the place, the eye is confronted with a glorious screen of noble trees, the confines of a wood, which not only affords shelter to the gardens, but admits of the growing of choice Ferns and other shade-loving plants, for Mr. Wilks owns one or two acres of the wood itself. The ground rises gently to the wood, and falls at intervals, so that the extent of the place is very deceptive, and one would imagine it to be much more than the six to seven acres which it comprises.

Mr. Wilks is almost as energetic in his 77th year as he was when we first knew him some thirty years ago, and under his guidance a keen gardener is not likely to miss anything of importance. A few specially choice plants, all in the best possible condition and succeeding admirably, are arranged about the residence and on its walls. A tree of *Magnolia Delavayi*, although only three years old, has grown beyond the eaves of the house, and has a trunk several inches through. This species has the largest leaves of all the *Magnolias*, and, being evergreen, is as valuable a wall plant as *M. grandiflora*, the one so commonly found clothing the walls of country mansions. Other species of interest were the shy blooming *Magnolia exoniensis*; *Vitis Thunbergii*, the Fig-leaved Vine, which is often confused with *V. Coignetiae*, but has smaller leaves, lobed like those of the Fig; the very handsome *Abelia sinensis*, which has white flowers with a faint blush, developed in axillary sprays a foot or so

long; and *Clematis tangutica*. The last is trained on a fence, and was in its full beauty, being covered with pointed globular flowers of rich golden colour. There are apparently two forms of this plant, the one introduced by Mr. Farrer being less imposing in its blooms and inferior generally to the other. An Elder, apparently *Sambucus canadensis*, filled the air with its perfume. It is a very ornamental shrub, with panicles some 15 inches across, from which we concluded it must be the variety *maxima*.

Mr. Wilks, as is well known, is keenly interested in fruit-growing, and we were not surprised that he conducted us first to his fruit trees. The fruit plantation has been very skillfully brought into the general scheme of planting, on the outskirts of the pleasure grounds, although each tree has plenty of room for development and a circular patch of ground beneath each is cultivated. There were abundant crops of Apples and Plums, and, as the

ceeding season offers something fresh that is beautiful.

Innumerable narrow grass paths run in the most irregular manner through all parts of "the field," as the owner prefers to call it, very much like one would find on a Surrey common. Some lead past great patches of pink or white Heather, others by masses of blue Monkshoods rising out of the grass; or clumps of the Devil's Bit Scabious, the purple Loosestrife, Ragwort (*Senecio Jacobaea*), *Hieracium umbellatum*, the Black Centaurea or Knapweed (*Centaurea nigra*), and other showy native species, for nothing that is beautiful amongst plants is despised in this truly wild garden.

But the visitor must keep his eyes wide open, or he will miss the treasures which abound, such as the dark orange form of *Glaux maritima*; the tiny species of *Rhododendrons*; the choice form of *Lilium tigrinum* known as *Fortunei*; the sweet-smelling Bog Myrtle, brought by the owner from Scotland; the many uncommon forms



FIG. 62.—FERNS IN THE WOOD AT "THE WILDERNESS."

trees are standards, they lend themselves to the general scheme of planting and beautify their environment in spring with a wealth of blossoms.

The standard Plum trees are remarkably fine specimens, but we much regretted to see that silver-leaf disease had appeared in some, necessitating their removal in the near future.

Most visitors to these gardens are surprised at the luxuriant clumps of *Arundinaria nitida*, and those who object to Bamboos in the garden because of their untidiness in strewing the ground with yellow foliage, should select this one, if we may judge by the specimens in this Surrey garden. Not only the Bamboos, but almost everything seems to be responding to some magic touch, whether it be the *Rhododendrons*, Barberries, *Cotoneasters*, *Ericas*, *Spiraeas*, *Cytisus*, *Roses*, and the thousand and one other plants which it contains. All have been planted by the owner, and in most cases he has raised them himself, either from seeds or cuttings, or they represent his discoveries either growing wild or in his friends' gardens. Although nothing is planted to order, there is an orderliness in the whole scheme, and each suc-

of wild *Ericas*; *Lobelia urens*, one of the rarest of British plants; *Geranium Shirley Blue*, which all who see desire to possess; the pale-flowered form of *Stachys Betonica*, and the Ferns, which are growing everywhere, and especially in the wood.

Of the wood, that known as the upper part was planted freely with Ferns several years ago (see Fig. 62), and, being all native species, they are naturalised and luxuriating. They are mostly plumose, crested, goffered, and other beautiful sports, the majority representing "finds" of Mr. Wilks, who has a keen eye for variety.

The woodland glades were very charming on the hot summer day of our visit, and colonies of hardy *Cyclamens* provided bright patches of colour amongst a carpet of Ivy, Ferns, *Lily-of-the-Valley*, *Oxalis*, and other shade-loving plants. Of the special treasures in the wood mention may be made of healthy colonies of *Pyrola uniflora*, *P. rotundifolia*, and *P. media*.

We have said enough to prove that this is a garden of originality, and we trust that the owner will long be spared to enjoy its beauty and to add many more treasures to those it already contains.

HARDY FLOWER BORDER.

HERBACEOUS PHLOXES AT ALDENHAM.

CONSIDERING the great variety in colour and the general usefulness of the border Phlox, in making a display in the garden from July until October, it is not surprising these plants are increasing in popularity.

Clumps arranged in suitable colours in the mixed herbaceous border impart brilliancy to that part of the garden and, as the plants are so easily cultivated, it is a matter for surprise that they are not more freely employed in gardens.

The Hon. Vicary Gibbs and Mr. Ed. Beckett, his gardener, have a strong penchant for these flowers, and at Aldenham a border, some one hundred yards long by 6 feet wide has been planted with Phloxes, grouped in three plants of each variety. At the time of my visit—the middle of August, numerous varieties were in bloom, and the names of the more imposing sorts, with their heights and colours, may be useful to those who intend to plant border Phloxes this autumn. They are as follows:—Mrs. Callander, 3 ft., pale rose, with a lighter centre; Baron von Dedem, 3 ft., brilliant rich scarlet; Europa, 3 ft., snow white with carmine-coloured eye, a very effective variety; Antoine Mercier, 3 ft., white with a lilac margin; Progress, 2 ft. 6 in., rose pink with lighter centre; Henry Martin, 2 ft., deep mauve; H. J. Jones, 3 ft., orange red, a brilliant colour; Sheriff Ivory, 3 ft., light rose with a crimson eye; Asia, 2 ft., lilac-rose; Lord Kelvin, 3 ft., brilliant red; Albert Vandal, 2 ft., violet-mauve with a crimson eye, an extra large bloom; C. Edwards, 2 ft., salmon; Marvel, 4 ft., purplish-violet with a crimson eye, and large branching inflorescence; Dr. Konigshofer, 3 ft., deep orange-scarlet with a crimson eye; Nettie Fardell, 2 ft., a pretty shade of pink; Dr. Paul Bachus, 2 ft., lilac-rose, the individual flowers are very large; nana coerulea, 1 ft., pale blue; Florrie Bennett, 2 ft., rich crimson, a very choice variety with a neat panicle; President Poincaré, of a dwarf habit, with large, deep mauve-coloured blossoms; General Pau, 3 ft., red with a crimson eye; Sigrid Arnoldson, 2 ft., rose colour; Gaston Cherau, 2½ ft., salmon-pink with a crimson eye, an extra large blossom; Mrs. Hargreaves, 2 ft., pink, with a crimson eye, also a large blossom; Hindenburg, 2 ft., deep cerise, flowers small; Widar 3 ft., lilac with a white eye, a handsome variety; Mrs. A. Hoope, 2 ft., a dwarf form of Miss Pemberton; Marconi, 2 ft., rich rosy-red; Rheingau, 3 ft., deep rose with a white eye; Aubrey Alder, 3 ft., rich salmon with a carmine eye, one of the best varieties; Sir David Beatty, 4 ft., a large inflorescence of bluish-violet coloured flowers; Phareon, 3 ft., lilac with a white eye; Evangeline, 2 ft., deep rose, white eye; Mrs. Oliver, 3 ft., salmon-pink, white eye, the growth is very compact and the large panicles are late in developing; Mrs. A. W. Alder, 3 ft., pale pink; Rhynstroom, 4 ft., rich pink with a white eye, one of the best varieties; Reich Graaf von Hockberg, 3 ft., a very effective dark blue variety; General von Heutsz, 4 ft., brilliant salmon-pink with a white eye.

Several white-flowered varieties are included, the best being Frau von Lassberg, 2 ft. *E. M.*

ANEMONE JAPONICA HUPEHENSIS.

The average height of this variety is 18 in., or half the height of the pale rose variety that has been grown in gardens for more than forty years under the names of *A. j. elegans*, and *A. j. hybrida*. The newer introduction has the aspect of a single Dahlia at no great distance away. This is largely due to the arrangement of the colours. The three outer sepals are of a dark, dull purple on the back, but this appears as a deep and bright purple on the face, thus contrasting markedly with the soft rose shade of the two inner sepals. There is a bed of it in the herbaceous ground at Kew, which is very effective on account of the number of flowers in various stages of development. It recalls the height of the rosy carmine *A. japonica* with numerous sepals, and which used to be fairly common in gardens forty years ago and earlier. *J. F.*

INTENSIVE CULTIVATION.*

(Continued from p. 134.)

THE schemes which the staff of the Horticultural Division had elaborated as the result of experience during the war were received and adopted with a cordiality which I like to think was evoked no less by the excellence of the schemes themselves than by the promise of liberal financial assistance in their execution. Thus it came about that when the time arrived for me to hand over the controllership of Horticulture to my successor, almost every county had established a strong County Horticultural Committee, and the chief counties from the point of view of intensive cultivation had provided themselves with a staff competent to demonstrate not only to cottagers and allotment holders, but also to smallholders and commercial growers, the best methods of intensive cultivation. In the most important counties horticultural superintendents with knowledge of commercial fruit-growing were being appointed, and demonstration fruit and market-garden plots, designed on lines laid down by Captain Wellington and his expert assistants, were in

Station; a Poultry Institute; and, most important of all from the point of view of education, the establishment at Cambridge of a School of Horticulture—constitute a horticultural organisation which, if properly co-ordinated and—dare I say it?—directed, should prove of supreme value to all classes of intensive cultivators. To achieve that result, however, something more than a permissive attitude on the part of the Ministry is required, and in completing the design of it I had hoped also to remain a part of that organisation long enough to assist in securing its functioning as a living, plastic, resourceful, directive force—a horticultural cerebrum. Thus developed, it is my conviction that this instrument is capable of bringing horticulture to a pitch of perfection undreamed of at the present time either in this country or elsewhere.

In my view horticulture has suffered in the past because the fostering of it was only incidental to the work of the Ministry. In spite of the fact that it had not a little to be grateful for—as for example the research stations to which I have referred—horticulture had been regarded rather as an agricultural side-show than as a thing in itself. My intention, in which I was

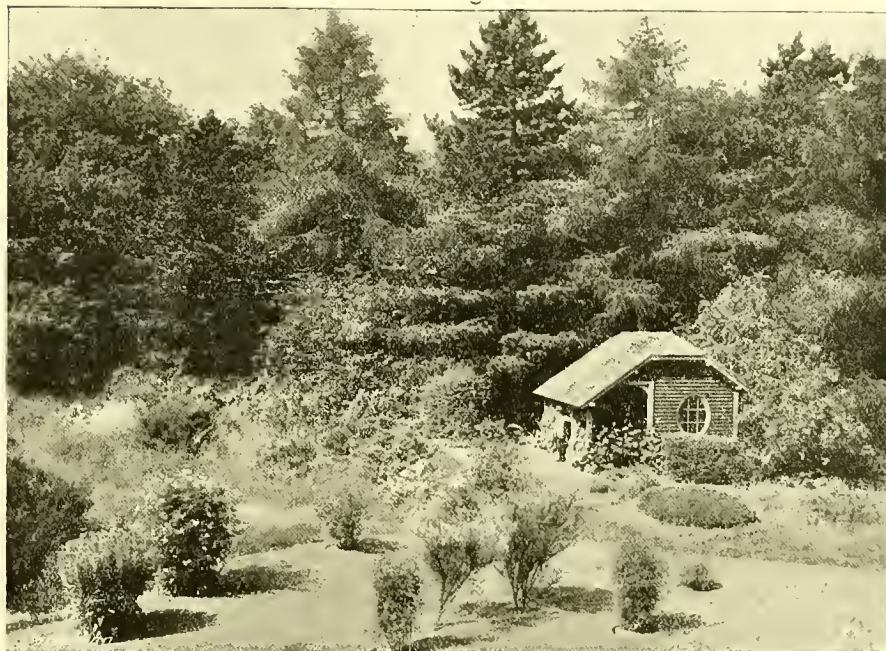


FIG. 63.—INFORMAL PLANTING AT "THE WILDERNESS." (See p. 144.)

course of establishment. The detailed plans for these links in a national chain of demonstration and trial plots have been published, and anyone who will study them will, I believe, recognise that they point the way to the successful development of a national system of intensive cultivation.

By means of these county stations the local cultivator may learn how to plant and maintain his fruit plantation and how to crop his vegetable quarters, what stock to run and what varieties to grow.

Farm stations—with the Research stations established previously by the Ministry; Long Ashton and East Malling for fruit investigations; the Lea Valley Growers' Association and Rothamstead for investigation of soil problems and pathology; the Imperial College of Science for research in plant physiology, together with a couple of stations, contemplated before the war, for local investigation of vegetable cultivation; an alliance with the Royal Horticultural Society's Research Station at Wisley, and with the John Innes Horticultural Institute for research in genetics; the Ormskirk Potato Trial

encouraged by Lord Ernle, Lord Lee, and Sir Daniel Hall, was to peg out on behalf of horticulture a large and valid claim and to work that claim. The conception of horticulture which I entertained was that comprised in the "petite culture" of the French. It included crops and stock, fruit and vegetables, flower and bulb and seed crops, Potatoes, pigs and poultry and bees. I held the view, and still hold it, that the small man's interests cannot be fostered by the big man's care; that horticulture is a thing in itself and requires constant consideration by horticulturists and not occasional help from agriculturally minded people, however distinguished and capable.

I had to include the pig and poultry, for the smallholder and commercial grower will have to keep the one and may with profit keep both, and he will have to modify his system of cultivation accordingly. The adoption of this conception of the scope of intensive cultivation opens up an array of new problems which require investigation, and it was my intention to endeavour to secure the experimental solution of these many problems of the research stations and elsewhere. Besides these problems—of green manuring, cropping, horticultural rotations—horticultural surveys would be made, "primeur" lands demarked

*Presidential address by Professor Frederick Keeble, C.B.E., Sc.D., F.R.S., to the Agricultural Section, British Association for the Advancement of Science, Cardiff, 1920.

for colonisation, and existing orchard lands ascertained and classified, as indeed we had begun to do in the West of England. But, above all, with this measure of independence for horticulture we, having the goodwill and support of the fraternity of horticulturists, aimed at putting to the test the certain belief which I hold that education—sympathetic and systematic—is an instrument the power of which, for our purpose, scarcely yet tried, is, in fact, of almost infinite potency. I believe with Mirabeau that, "after bread, education is the first need of the people," and I know that the people themselves are ready to receive it.

Contrast this horticultural prospect with the fact that a group of smallholders in an outlying district informed one of my inspectors that his was the first visit that they had received for many years, or with the fact that remediable diseases are still rife in hundreds of gardens, or that few small growers understand the principles which should guide them in deciding whether or not to spray their Potatoes, or that West Country orchardists exist who let dessert fruit tumble to the ground and sell it in ignorance of its true value, or that unthrifty fruit-trees may be top-grafted but are not, or that it is often ignored that arsenate of lead as a spray fluid for fruit pays over and over again for its use, or even that growers in plenty

concealed hostility of those he wishes to assist. That a state of confidence and co-operation may be established is proved by the record of the Horticultural Advisory Committee which was set up by Lord Ernle during my controllership. The Committee consisted of representatives of all the many branches of horticulture—fruit-growers, nurserymen, market gardeners, growers under glass, salesmen, researchers, and so forth. That Committee became, as it were, the Deputy-Controller of Horticulture. To it all large questions of policy were referred, and to its disinterested service horticulture owes a great debt. That its existence has been rendered permanent by Lord Lee is of good augury for the future of intensive cultivation. As an instance of the judicial temper in which this Committee attended to its business I may mention that when an Order—the Silver Leaf Order—was under discussion the only objection to its terms on the part of the fruit growers on the Committee was that the restrictive measures which it contemplated were not drastic enough: a noteworthy example of assent to a self-denying ordinance.

It may be asked, What are the subjects in which growers require education? To answer that question fully would require an Address in itself. Among those subjects, however, mention

express on the organisation of intensive cultivation may be summarised thus:—

1. The object of the organisation is to improve local and general cultivation, the former by demonstration the latter by research.

2. The method of organisation must provide for co-operation between the horticulture officers of the State and the persons engaged in the industry. This co-operation must be real and complete. Dummy Committees are silly devices adopted merely by second-rate men and merely clever administrators. The co-operation must embrace the policy as well as the practice of administration. Nevertheless the horticultural officers of the State must be leaders. They can, however, lead only by the power of knowledge.

Wherefore an administrator who lacks practical knowledge and scientific training is not qualified to act as the executive head of a horticultural administration. The head must of course possess administrative capacity, but this form of ability is by no means uncommon among Britons, although it is a custom to represent it as something akin to inspiration and the attribute of the otherwise incompetent. The directing head must possess a wide practical knowledge of horticulture that alone can fire the train of his imagination to useful and great issues. His right-hand man, however, must be one versed in departmental and interdepartmental intricacies—the best type of administrator—of sober and cool judgment and keen intelligence, unused perhaps to enthusiasm, but not intolerant of nor immune from it. Similarly in each sub-department for cultivation, disease-prevention, small stock, etc., the head must be a trained practical man with an administrator as his chief assistant. The outdoor officers, the intelligence officers of the organisation, must also be men of sound and wide practical knowledge and must know that their reports will be read by someone who understands the subjects whereof they speak.

It was on these lines that the Horticultural Division was organised under Lord Ernle, Lord Lee, and Sir Daniel Hall. The work accomplished justified the innovation.

This is the contribution which I feel it my duty to make on the vexed question of the relation between expert and administrator in Departments of State which deal with technical and vital problems.

I believe that no administrator, save the rare genius, can direct the expert, whereas the expert with trained scientific mind and possessed of a fair measure of administrative ability can direct any but a genius for administration. If the work of a Government office is to be and remain purely administrative no creative capacity is required, and it may be left in the sure and safe and able hands of the trained administrator; but if the work is to be creative it must be under the direction of minds turned as only research can turn them—in the direction of creativeness. To the technically initiated initiation is easy and attractive, to the uninitiated it is difficult and repugnant.

The useful work that such a staff as I have indicated would find to do is well-nigh endless. It would become a bureau of information in national horticulture, and the knowledge which it acquired would be of no less use to investigators than to the industry. Diseases ravage our orchards and gardens, some are known to be remediable and yet persist, others require immediate and vigorous team-wise investigation, and yet continue to be investigated by solitary workers or single research institutions.

Certain new varieties of some soft fruits are known to be better than the older varieties, and yet the latter continue to be widely cultivated. The transport and distribution of perishable fruit is often inadequate—"making a famine where abundance lies." The information gathered in during the constant survey of the progress of horticulture would serve not only to direct educational effort into useful channels, but to stimulate and assist research. For the headquarters staff of trained men learns in the course of its administrative work many things, which, albeit unknown to the researcher, are of first importance to him who is bent on advancing horticultural knowledge.

(To be continued.)



FIG. 64.—HARDY PLANTS IN ASSOCIATION WITH TREES AT "THE WILDERNESS," CROYDON.
(See p. 144.)

still do not know that Scotch or Irish or once-grown Lincolnshire seed Potatoes are generally more profitable than is home-grown or local seed. The truth is that great skill and sure knowledge exist among small cultivators side by side with much ignorance and moderate practical ability. Herein lies the opportunity of the kind of education which I have in mind. But for any such intensive system of education to prevail the isolation both of cultivators and of Government Departments must be abolished. Out of that isolation hostility arises, in which medium no seed of education will germinate. It is troublesome, but not difficult, to abolish hostility. It vanishes when direct relations are established and maintained between a Department and those whose affairs it administers. The paternal method will not do it. The official life, lived "remote, unfriendly, alone," with only underlings as missionaries to the heathen public, will not do it.

There is only one way to prepare the ground for the intensive cultivation of education, and that is to secure the full co-operation of officials and cultivators. If this be not done the official must continue to hear with resignation the un-

may be made of a few: the extermination or top-grafting of unthrifty fruit, the proper spacing and pruning of fruit trees, the use of suitable stocks, systematic orchard-spraying, the use of thrifty varieties of bush fruit and the proper manuring thereof, the choice of varieties suitable to given soils and districts and for early cropping, the better grading and packing of fruit.

Of all methods of instruction in this last subject the best is that provided by fruit exhibitions. Those interested in the promotion of British fruit-growing will well remember the object lesson in good and bad packing provided by the first Eastern Counties Fruit Show, held at Cambridge in 1919. That exhibition, organised by East Anglian fruit-growers with the assistance of the Horticultural Division of the Ministry of Agriculture, demonstrated three things: first, that fruit of the finest quality is being grown in East Anglia; second, that this district may perhaps become the largest fruit-growing region in England; and, third, that among many growers profound ignorance exists with respect to the preparation of fruit for market.

The opinions which I have endeavoured to

FRUIT REGISTER.

APPLE ST. EVERARD.

I FIRST planted this fine early dessert Apple (see Fig. 65) a few years ago, and every succeeding year confirms my good opinion of it. I venture to assert that it is the only early dessert Apple that possesses the true Cox's Orange Pippin flavour, and all who are keen on good flavour should plant, at any rate, a tree or two of St. Everard. The fruit is in season in early September; the flesh is crisp, juicy, and grandly flavoured, and on our soil the tree crops freely and consistently. In appearance, the fruit resembles Cox's Orange Pippin to a remarkable degree, and the best specimens are finely and highly coloured. To sum up, I rank it as one of the very finest Apples of modern introduction, and I am inclined to think that my opinion will prevail generally when the fruit has had a good trial. *F. Herbert Chapman, Rye.*

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 135.)

HERTFORDSHIRE.—The fruit crops generally are lamentably small, but the quality of what few fruits there are is generally good. There was a large quantity of bloom, but bad weather at the time seemed to destroy it. Strawberries did not flower so freely as usual. The soil here is a heavy loam, overlaying the London clay, and is very cold and wet. *E. F. Hazelton, North Mymms Gardens, Hatfield.*

LEICESTERSHIRE.—There was a very good show of blossom, but owing to cold winds and wet weather the blossoms were crippled before the pollen had a chance of reaching maturity. This, in my opinion, is the reason for the failure of the fruit crops. The heavy crops of last season had a detrimental effect on the trees, and they had not recovered enough energy to fruit well this season. Our soil is light to heavy in texture. *W. Coe, Prestwold Gardens, Loughborough.*

NORTHAMPTONSHIRE.—Apple and Pear trees in open orchards are, with very few exceptions, fruitless. The whole month of April—when Apple and Pear trees were in bloom—was cold and wet, which adversely affected the setting of the fruit. Fine weather prevailed during the middle of March, when Plum trees were in flower, and the fruits set well; many old Plum trees are so heavily laden with fruit that it has been necessary to support the branches. Morello Cherries were an excellent crop, but sweet Cherries were only moderate; many of the fruits dropped during the stoning period. Peaches and Nectarines did not set well, owing to wet, cold weather when in bloom. Raspberries and all bush fruits bore exceptionally heavy crops of good quality fruits. Strawberries also were a very heavy crop, and of excellent quality. We gathered the first dish of King George V. in the open on June 5, and were gathering excellent fruit of Laxton's Latest on July 21. *F. W. Gallop, Lilford Gardens, Barnwell, Peterborough.*

NOTTINGHAMSHIRE.—The fruit crops are variable; all the trees carried an average amount of blossom, and Plum trees flowered most abundantly. A severe hail storm destroyed all hope of a crop of Plums and Pears when the trees were in flower. Bramley's Seedling, Worcester Pearmain, The Queen, Golden Noble, Lord Derby, and Lane's Prince Albert are our best cropped Apples, while Louise Bonne of Jersey is our only heavily cropped Pear. Raspberries have been most abundant. This neighbourhood is entirely devoid of Plums and Damsons. *James Gibson, Welbeck Gardens, Worksop.*

OXFORDSHIRE.—Apples are a very poor crop; only a few varieties, including Worcester Pearmain, Beauty of Bath, King of the Pippins, and Irish Peach amongst dessert varieties, are carrying a crop, and Golden Noble is the best of a bad crop in the culinary class. Pears set freely and are looking well on trees growing on a south wall. Plums are again doing best on a

north wall. Cherries were under the average, but of good quality. Nectarines and Peaches are failures on walls; though every protection was given the trees against frost the fruits failed to set. The small fruits, Raspberries excluded, did extremely well, though owing to unsettled weather a great deal of the fruit was spoilt before it was ripe enough to gather. *E. G. Keuns, Blenheim Gardens, Woodstock.*

—Apple, Pear, and Cherry trees all flowered well, but failed to set good crops. Varieties of Apples that set best are Warner's King, Ecklinville Seedling, Tower of Glamis, Lord Derby, and Worcester Pearmain. Of stone fruits Plums and Apricots have the best crops. Gooseberries and Currants were plentiful. Strawberries set fairly well, but many of them were spoilt by heavy rains. *C. E. Munday, Nuncham Park Gardens.*

was spoilt by continued wet weather throughout the fruiting season. Gooseberries were plentiful, Currants and Raspberries equal to the average. Cherries were a very light crop. Caterpillars have been very troublesome in spite of special spring spraying. *Frank J. Clark, Aston Rowant Gardens.*

—Apples are an average crop; Pears a good crop, with fine fruit. Gooseberries and Currants were abundant, but Raspberries were under the average yield. Damsons and Plums are an average quantity, and of good quality. Of Gages we have a heavy crop of very good fruits. The soil is a light loam on gravel and chalk. *John A. Hall, Shiplake Court Gardens, Henley-on-Thames.*

WARWICKSHIRE.—The pomaceous and drupaceous fruit crops are only 10 to 20 per cent. of the average. The crop of Raspberries was also



FIG. 65.—APPLE ST EVERARD; AN EARLY DESSERT VARIETY.

—The fruit crops are very much under the average. There was an abundance of bloom, but a continuation of dull, rainy weather during that period spoilt all prospects of a good fruit year, and the consequence is very light crop of Apples, Pears, and all stone fruits, with the exception of Peaches, which are good, both indoors and out. Small bush fruits were plentiful and good. The same is true of Strawberries, although a lot of Raspberries and Strawberries were spoilt through continued wet weather; still, the crop was well up to the average. We have been very free from aphides, but fungous diseases are bad on Apples and Pears. *Ben. Campbell, Cornbury Park Gardens, Charlbury.*

—Apples are almost a total failure. Some varieties of Pears are producing an average crop, and the quality promises to be good, notably Pitmaston Duchess. Plums are very unsexed; some of the trees are heavily laden, whilst others are fruitless. Strawberries produced fairly heavy crops, King George, Monarch, and Sir Joseph Paxton proving the best sorts, but the greater part of this crop

poor, owing, in my opinion, to the lack of bees, the Isle of Wight disease having killed my stocks. Two years ago I discarded Royal George Peach, this year I shall discard Dymond; the proneness of these two varieties to mildew renders them a nuisance. Kestrel and Peregrine are handsome and healthy replacements. *Ben H. Martin, Moreton Paddox Gardens, Warwick.*

—The fruit crops are, on the whole, disappointing, chiefly due to the very light crops of Apples, Pears and Plums, the last crop being the worst for a number of years. Owing to the very mild winter and the exceptional weather in February, the trees were very forward—some varieties of Apples were actually in bloom early in March—and all consequently suffered from the very cold and inclement weather which afterwards prevailed. Trees in exposed positions failed to set any fruits. Insect pests have also been much more troublesome, and where spraying was not carried out the crop will be still further reduced from this cause. *H. F. Smale, Warwick Castle Gardens.*

ENGLAND, S.

BERKSHIRE.—Strawberries came to grief through the early frost, although late varieties were somewhat better. Apples are a thin crop, but of good quality; young trees and cordons are furnishing the best supplies. Royal Jubilee and King Edward the VII. escaped the early frost, as they bloom late, and are carrying nice fruits, as also are Ribston Pippin, Lady Sudeley, King of the Pippins, Pott's Seedling, and a few others. Plums are good, especially The Czar, Victoria, Prince of Wales and Diamond. Trees of the last named have cropped for eleven years, but are heavily fruited again this season; these are standards. Wall Plums are bearing thinly. Pears are scarce, but of good quality. All bush fruits were good; also Morello Cherries. *A. B. Wadds, Englefield Gardens, Reading.*

—Owing to the mild winter, fruit trees flowered slightly earlier than usual, and the display promised well for good crops. On close inspection, however, many of the flowers proved to be deformed. This, coupled with two nights of sharp frost, spoiled the Apple crop, and Pears are also light. Bush fruits did not suffer much, but Strawberries were badly frosted and the crop was considerably below the average. Peaches and Nectarines were protected, and a fair set was obtained. Later, blister leaf was troublesome, and undersized fruit may be expected. Owing to shortage of labour, Woolly Aphis has made great progress here on Apple trees, but preventive measures are being taken. The soil is a light yellow loam. *J. Minty, Oakley Court Gardens, Windsor.*

HAMPSHIRE.—The fruit crops in this district are much below the average. Apples are very scarce, one or two varieties excepted. Miller's Seedling and Worcester Pearmain are generally carrying fair crops among the dessert varieties, while among the culinary kinds Lane's Prince Albert, Lord Derby, and Mère de Ménage are the best. Sandringham also has a fair crop, but many kinds are quite bare of fruit, although most of the trees showed a fair amount of blossom. Even after fruit set it failed to mature. All the trees were heavily cropped last season, and possibly the dry weather in May caused the failure. *J. Howard, Benham Valence Gardens, Newbury.*

DORSETSHIRE.—The Apple crop is the greatest failure in my recollection. Whilst certain kinds of Pears—late kinds in particular—have failed to crop, some wall trees are heavily cropped, but at the time of writing the fruits are small in consequence of the cold nights and lack of warmth in the soil also. Of Plums Early Prolific, Czar, and Victoria have average crops on wall trees, but choice dessert kinds are scarce. Both sweet and Morello Cherries had light crops, but good in quality. Peaches, Nectarines, and Apricots were in bloom in the wintry weather of the first fortnight in March, and are either failures or very light crops. With the exception of Black Currants, small fruits are average crops, and good in quality. A humid atmosphere following thunder showers, was responsible for loss in the Strawberry crop, many of the berries rotting. Cobnuts and Filberts are well cropped, but Walnuts are below the average yield. *T. Turton, Castle Gardens, Sherborne.*

—After a splendid promise in spring, the results are very small; continuous wet weather when the trees were in flower and low temperature are no doubt the chief causes. Apples cropping best are Duke of Devonshire, Lord Derby, Golden Noble, Keswick Codling, Peasegood's Nonsuch, Lady Henniker, and a few other sorts. Pears: Beurré Diel, Beurré Alex. Lucas, Durondeau, and Princess are the best cropped. Plums: Orleans, Rivers' Early Prolific, Pond's Seedling, and Victoria have heavy crops. Varieties of Peaches with good crops are Amsden June, Crimson Galigne, and that good late sort Golden Eagle. Gooseberries and Black Currants were both good. Filberts are satisfactory, but we have no Walnuts. *Thos. Deany, Down House Gardens, Blandford.*

(To be continued.)

HAMPTON COURT GARDENS.

HAMPTON COURT Palace Gardens have, this summer, been visited by many thousands of visitors, reminiscent of pre-war times.

The work of renovation and reconstruction outlined by the committee set up by the First Commissioner of Works is not yet completed, but the remaining flower beds which during the war period were utilised for the cultivation of vegetables, are now as beautiful with various flowering and foliage plants as ever before.

The forty or so beds, which formerly were between the five old Yew trees, are no more, and in their stead there are restful, smooth, green lawns. All *habitués* of Hampton Court miss them, but will no doubt become accustomed to the new order in time. While this "improvement" is a matter of different opinion, there does not seem to be any doubt but that the abandonment of the two beds opposite the garden entrance of the palace is a serious loss to the general effect of the gardens.

The arrangement of the existing beds is very much the same as of old. Begonias, such as Major Hope and Hampton Court, bloom over a groundwork of *Koenigia maritima* or of *Leucophyton Brownell*. A large bed of *Streptosolon Jamesonii* is alternated with standards of dark *Heliotrope*. White *Pelargonium Queen of the Belgians* is edged with *Lobelia Waverley*. The pink *Verbena*, Miss Willmott, has a carpet of white, and the glowing orange *Pelargonium Maxim Kovalesky* is associated with dwarf Sweet Alyssum. Roses have done very well this summer and the wet weather induced such robust growth that the promise of autumn flowering is excellent.

In the famous "Long Border" the floral display is even finer. Herbaceous Phloxes of many colours have made a glorious display, which now is provided by such border Chrysanthemums as Geacher's Pink, Champ d'Or, White Massé, and Piercey's Seedling. A block of *Monarda didyma*, lightened by the feathery plumes of *Humea elegans*, is a particularly happy inspiration in plant association. *Humeas* are planted somewhat freely in the long border, and their grace and colour add greatly to the attractiveness of the display.

Hollyhocks, both double and single, of a good strain, have delighted large numbers of visitors, and of their taller growing border plants mention should be made of the *Delphiniums*, *Aconitums*, and various *Michaelmas Daisies*, whilst of the more lowly plants splendid effect has been obtained throughout the season by the free use of *Viscaria*, *Linums*, *Gaillardias*, *Aquilegias*, and *Gypsophila paniculata* of the hardy sorts; while such tender plant's as *Liliums*, the sweet-smelling *Bouvardia Humboldtii*, and *Gazania splendens*, have found many admirers. The partial clearance of the Priory Gardens has been a marked success, and this part is now one of the most attractive places of the grounds. The enclosed Dutch Garden, or "King Henry VIII's Pond Garden," never fails to please.

Notwithstanding the charge made for admission to the vinery, the 152 year-old Vine has lost none of its popularity for we read in the daily Press that up to mid-August 170,000 had paid for admission. The crop of Grapes has, for the first time, been sold to the public at 5s. per pound, including a basket made at St. Dunstan's by our blinded heroes.

In the Round Pond the hardy *Nymphaeas* have celebrated the return of the gardens to floriculture in truly royal fashion, but from this point one gladly returns to the flower beds, for the opposite banks of the "canal," which formerly were a luxuriant wilderness, are sad and desolate in their "renovation"; but this condition is probably due to a shortage of labour, and will be remedied before next summer. *A. C. B.*

[Readers will be interested in comparing the description of these famous gardens written in *Gard. Chron.* seventy-five years ago and reproduced on p. 140.—Eds.]

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Mission to Hop-pickers.—Our mission work among the hop-pickers was necessarily and rightly curtailed from 1914-18, and last year it was not normal, but this season the hop-picking will be on a pre-war scale and the Mission work is being arranged accordingly. Nurses are being provided and dispensaries opened; Sunday-schools, lantern and other services are being arranged; concerts and entertainments will be provided; and coffee stalls and barrows are being organised to supply much-needed and wholesome refreshments. A large body of missionaries, men and women, will devote the next few weeks to work among the pickers, and these will include a body of students from King's College, London, which is this year initiating a College Mission, under the direction of the C.E.T.S. Hop-pickers' Mission, at an important picking centre near Faversham. This Mission will cost at least £200 this year, and we specially appeal for funds. *C. F. Tonks, 64, Burgate, Canterbury.*

Women Gardeners.—The practice of employing women gardeners seems to be dying out. No one will engage a woman if a man is obtainable. Why? In many things women are better than men; for example, in taste and originality in designing and decorating. They are also lighter in touch for thinning Grapes, etc. In all but cultivating exceptionally heavy soils they are equally physically fit and enthusiastic. Yet, slowly but surely, women are being pushed out of the profession and find themselves up against a blank wall, and, having given five or six years to the work, they are now too old to start learning anything else. There is no need to employ women at the expense of letting men go idle; there is room for all. Only a deep-rooted prejudice induces employers to seek male labour, and if this is not available to go without. *M. G.*

Gentiana asclepiadea (see p. 124).—I read with much interest Mr. Diver's remarks on this beautiful and attractive plant. There are two clumps of it by the stream that skirts the rectory here, and they have been much admired by every one who has seen them each season for the past ten years. Not at any time have the plants exceeded 15 inches in height until this summer. This July several of the shoots were more than 2 feet high, with 10 to 12 inches of the top a delightful spray of from one to three flowers arising from the axils of the leaves. I attribute the special length of growth to the weather of July being dull and wet, with rain, more or less, on 25 days. The plants are growing in a south aspect in the full exposure to sunshine. *John Urquhart, Hoddam Castle Gardens, Ecclefechan.*

Hard, Over-ripe Seed Potatoes (see p. 112).—I was much interested in Mr. Stokes' remarks on Potatoes. I always select May Queen for pot and frame culture, also as a first early in the open, and use home saved with very good results. I purchase seed from my seedsman and plant out of doors in the usual way, allowing the tubers to remain in the ground until they are fully matured. They are then lifted and left on the ground for a week or ten days until the skins are quite green, when they are stored in boxes in a frost-proof shed. In December they are stood in boxes to sprout, which they always do freely. As soon as they are ready I disbud the shoots to two and plant in pots and frames during January. This year I started lifting new Potatoes on April 1. *W. S. Barrell, Coombe Cottage, Kingston Hill.*

—Mr. Stokes, in the course of his remarks on p. 112, stated that the "sets" were greened. As a result of my own investigations I think greening is detrimental. Chlorophyll acts as a preservative and Pears serve as an excellent example of this, for when the chlorophyll has disappeared Pears slowly commence to decay. What is true of Pears is true of Potatoes in this respect. Hard sets are not due to leaf-curl or to over-ripeness, but to the fact that the seed has been "well greened," in other words—preserved. *G. Chambers, Horticultural Instructor, Monmouthshire.*

SOCIETIES.

ROYAL CALEDONIAN HORTICULTURAL.

SEPTEMBER 8 AND 9.—The second post-war autumn fruit and flower show of this society was held in the Waverley Market, Edinburgh, on these dates. Last year the entries totalled little more than one half those of the 1915 show, and this year there was an increase of about 10 per cent. on last year's figure. Hardy fruits were below the usual standard at these shows, and, owing no doubt to shortage of fuel and other difficulties, the displays of house fruits were also inferior. The trade exhibits, however, and also the very creditable display of vegetables made by allotment-holders belonging to the Edinburgh and District Federation, who held their exhibition in conjunction with this show for the second time, added greatly to the interest of the exhibition, and made it much more attractive from the spectacular point of view than it would have been otherwise. The show was opened by the Marchioness of Tweeddale, and the gate receipts were slightly more than those of last year.

Fruit.—In the first class in this section—a table of twelve dishes of fruit—there were two entrants, and the first prize, with the Laird and Dickson special prize of silver plate (to be won three times), was awarded to J. Neilson, Esq., of Mollance, Castle Douglas (gr., John M. Stewart). Mr. Neilson's fruits were: Apples, Peargood's Nonesuch and Charles Ross (two dishes). Grapes, Black Hamburgh and Muscat of Alexandria (two dishes), Melon Universal; Nectarines Pineapple, and Pit-maston Orange (two dishes), Peaches, Sea Eagle (two dishes), Pears, Williams' Bon Chrétien and Marguerite Marillat (two dishes), and Plums. He obtained 90½ points out of a possible 114 for fruit, and 10 out of 18 for decoration. The second prize was awarded to the other entrant, the Rt. Hon. A. J. Balfour, M.P., Whittinghame, East Lothian (gr., Geo. Anderson), who obtained 8½ points out of a possible 108 for fruit, and 9 out of 18 for decoration.

In the second class—six bunches of Grapes (not fewer than three varieties, and not more than two bunches of any variety)—for which there were also two entrants, as against four last year, the first prize, with the Thomson Challenge Trophy for Grapes (to be won three times) and a gold badge, also fell to Mr. Neilson, and the second prize was awarded to the other entrant, the Rt. Hon. Sir Herbert Maxwell, Bart., of Monreith, Wigtownshire (gr., Samuel Gordon). The points awarded to Mr. Neilson's exhibit were as follows:

	Points awarded.	Maximum points.
1. Madresfield Court	8½	9
2. " " " " " " " " " " " "	8	9
3. Black Hamburgh	8	9
4. " " " " " " " " " " " "	7½	9
5. Muscat of Alexandria	7½	10
6. " " " " " " " " " " " "	7	10
	46½	56

Sir Herbert Maxwell obtained 43½ points for his bunches out of a possible of 51.

For four bunches of Grapes, distinct varieties, the first prize was awarded to Lady Violet Astor, Meikleour House, Perthshire (gr., J. Chisholm). The Rt. Hon. the Earl of Wemyss, Gosford, East Lothian (gr., Wm. Galloway), was first for two bunches of Muscat of Alexandria, and Major C. L. Gordon, Threave House, Castle Douglas (gr., J. Duff), was first for two bunches of Black Hamburgh. In the single bunch classes the Earl of Wemyss excelled for Muscat of Alexandria; Lady Violet Astor for Black Hamburgh; Gilbert Ogilvy, Esq., Winton Castle, East Lothian (gr., J. McFadyen), for Alicante; and the Rt. Hon. A. J. Balfour for Madresfield Court.

J. Neilson, Esq., was awarded the first prize for one white-fleshed Melon, and the Rt. Hon. the Earl of Stair, Oxenford, Midlothian (gr., A. C. Scott), for one red-fleshed Melon.

In the single dish classes for indoor fruit (except Plums), Sir Herbert Maxwell excelled

for Figs; Sir N. H. May, Bughtrigg, Coldstream (gr., J. Loan), for Peaches and purple Plums; D. Landale, Esq., Dalswinton, Dumfries (gr., R. Grigor), for Nectarines the Marchioness of Tweeddale, Yester, East Lothian (gr., A. McLeod), for Apricots; the Earl of Wemyss for gage Plums; Col. Heywood Lonsdale, Market Drayton (gr., J. Mills), for yellow Plums; and Major C. L. Gordon for red Plums.

In the classes for fruit grown out-of-doors, the first prize for twelve varieties of Apples, five fruits of each, ripe or unripe, was awarded to Major Gordon, who was the only entrant, and the same competitor also excelled for twelve varieties of Apples grown in Scotland. The Rt. Hon. the Earl of Home, The Hirsell, Coldstream (gr., D. Black), was first for six dessert Apples, in two varieties, fit for the table, grown in Scotland. In the single dish classes, restricted to Scottish growers, the Earl of Wemyss excelled for Newton Wonder and Gascoigne's Scarlet; Mr. W. T. Landreth, Coldstream, for Irish Peach; Sir Herbert Maxwell for James Grieve, Sir N. H. May for Worcester Pearmain; Lane's Prince Albert and Stirling Castle; Sir Charles Dalrymple, Bart., Newhailes, Midlothian (gr., A. Wright), for Ecklinville Seedling; Major Gordon for Emperor Alexander, Golden Spire, and Grenadier; Lady Violet Astor for Lord Derby, Lord Grosvenor, and Lord Suffolk; and Mr. W. Cormack, Archerfield Gardens, East Lothian, for Warner's King and Dumelow's Seedling (syn. Wellington).

For PEARS grown out of doors, the Earl of Wemyss was first for six varieties, four fruits of each, and also for six varieties grown in Scotland. In the single dish classes, restricted to Scottish growers, Lady Violet Astor excelled for Beurré d'Amanlis and Williams' Bon Chrétien, the Marchioness of Tweeddale for Conference, the Earl of Wemyss for Devonné du Comice and Durondeau, Mr. T. Landreth for Pitmaston Duchess, and the Earl of Home for Souvenir de Congres.

Plants.—These formed a small section, and the first prizes were awarded to the following: Mr. A. Archibald, V.C., Leith, for dwarf hardy Ferns; John Turner, Esq., Inverlmond, Midlothian (gr., J. A. Sword), for single and double tuberous-rooted Begonias and zonale Pelargoniums, A. Dryburgh, Esq., Gogar Park, Midlothian (gr., A. Findlay) for Fuchsias and Ivy-leaved Pelargoniums.

Cut Flowers.—The winners of the first prizes in this section were:—Mr. J. RICHARDSON, Polmont, for Phloxes and Violas; Mr. D. WHITE-LAW, Laurencekirk, for Gladioli; Mr. A. GRANT, Bo'ness, for collerette and single Dahlias; Sir N. H. MAY and Mr. T. M. KIRKWOOD, Crieff, for Sweet Peas; Mrs. REID, Milnathort (gr. J. Pearson), for 24 Roses and 12 H.T. Roses respectively; Mrs. RUSSELL, Newton Mearns, for scarlet or crimson Roses, pink Roses, and white Roses; Sir R. C. MUNRO FERGUSON, Raith (gr. D. McLean), for rambling Roses; Sir BASIL MONTGOMERY, Kinross (gr. R. Fraser), for Roses in vases; Mr. W. HART, Manor House Gardens, Dunbar, for perpetual-flowering Carnations and perpetual "Malmaison" Carnations; Mr. H. McCOLL, Preston, Linlithgow, for fancy and show Pansies; the EARL OF HOME, J. TURNER, Esq., and Mr. A. GRANT for early-flowering Chrysanthemums; Major C. L. GORDON, for Michaelmas Daisies; Mr. J. STEWART, Alloa, for hardy herbaceous perennials; Major A. D. FORBES, Clovenfords (gr. J. Cochrane), for hardy or half-hardy annuals; J. IVORY, Esq., Colinton (gr. J. Coventry), for a collection of cut flowers (36 vases); and Mr. W. HOWIESON, Dolphinton, for Begonias.

OPEN CLASSES.

Cut Flowers.—The winners of the first prizes in this section were:—Messrs. HUGH DICKSON, LTD., Belfast, for (a) 36 Roses distinct; (b) 12 blooms of any red or crimson Rose; (c) 12 any white Rose; and (d) 12 garden or decorative Roses; Messrs. J. FAIRLEY AND CO., Cairneyhill, Fife for (a) 18 H.T. Roses; (b) 12 of any pink Rose; and (c) 12 vases of Roses; Sir R. C. MUNRO FERGUSON, for early-flowering

Chrysanthemums; and Mr. A. GRANT, for collerette Dahlias.

Vegetables.—The first prize in the open classes for a collection of vegetables was won by Mr. J. GRAY, Uddingston, and he was also placed first for Peas and long Carrots. First honours fell to the following in the other classes:—J. NEILSON, Esq., for Cucumbers, Celery, and Parsnips; J. E. B. COWPER, Esq., Gogar House, Midlothian (gr. R. W. Dingwall), for Tomatos and kidney Potatos; Major AITKEN, Chirnside (gr. A. Corsar), for French Beans; D. LANDALE, Esq., for Broad Beans, and 12 varieties of Potatos; W. S. DAVIDSON, Esq., Luchie, North Berwick (gr. J. M. Mason), for Brussels Sprouts and Cabbage; GILBERT OGILVY, Esq., for Cauliflower; Mr. P. LAWRIE, Kirknewton, Midlothian, for Savoy; J. TURNER, Esq., for curled Greens; Mr. T. NICHOL, Earlstoun, for Lettuce; Mr. C. DAVIDSON, Pencaitland, East Lothian, for Beet; Mr. H. CUMMING, Rumbling Bridge, for stump-rooted Carrots and yellow Turnips; Major C. L. GORDON, for white Turnips; the Rt. Hon. A. J. BALFOUR, for Leeks; Mr. T. WATSON, Carluke, for Onions; Mr. W. HUNTER, Dunbar, for round Potatos; and Miss BURTON, Poltor, Midlothian, for immune Potatos.

AWARDS TO NOVELTIES.

FIRST-CLASS CERTIFICATES.

Rose Marjorie Bulkeley, exhibited by Messrs. HUGH DICKSON, LTD., Belfast, and to Paeony-flowered *Dahlia Porthos*, exhibited by Messrs. DOBBIE AND CO., LTD., Edinburgh.

AWARDS OF MERIT.

Chrysanthemum September White, exhibited by Messrs. W. WELLS AND CO., Merstham; *Chrysanthemum Lichfield Purple*, exhibited by Mr. A. W. THORPE, Lichfield; and collerette *Dahlia Islay* and *Uva*, and cactus *Dahlia Abbotsford*, exhibited by Messrs. DOBBIE AND CO., LTD., Edinburgh.

NON-COMPETITIVE EXHIBITS.

The following awards were made to trade exhibits:—Gold Medals to Messrs. STORRIE AND STORRIE, Glencarse, for fruit trees in pots, etc.; Messrs. DOBBIE AND CO., LTD., Edinburgh, for Dahlias, Begonias, etc.; Messrs. TILLIE, WHITE AND CO., Edinburgh, for vegetables, etc.; Messrs. HARKNESS AND SONS, Bedale, for herbaceous plants; Mr. H. N. ELLISON, West Bromwich, for Ferns; and Mr. R. LAWRIE, Carnwath, for Begonias. Silver-Gilt Medals to Messrs. JOHN DOWNIE, Edinburgh, for Roses, Phloxes, etc.; Messrs. JOHN FORBES (HAWICK) LIMITED, for Phloxes, Pentstemons and herbaceous plants; Messrs. CUNNINGHAM, FRASER AND CO., Edinburgh, for herbaceous and alpine plants; Messrs. LAIRD AND DICKSON, Edinburgh, for herbaceous plants, etc.; Messrs. ALLWOOD BROTHERS, Hayward's Heath, for Carnations and hybrid pink Allwoodii; Messrs. KENT AND BRYDON, Darlington, for Roses; Mr. W. WELLS, Junr., Merstham, for herbaceous plants; and Mr. JAMES HAY, Edinburgh, for a decorated dinner table. Bronze Medal to Messrs. REAMS-BOTTOM AND CO., for Anemones.

NORTH OF ENGLAND PANSY AND VIOLA (NORTH-EASTERN SECTION).

This society held a show in connection with the Newcastle-on-Tyne Exhibition on Aug. 31, Sept. 1-2, and there was a very fine display. The awards were as under:—

For 24 Violas: First prize Mr. F. J. Bell, Whitley Bay, with a fine display, equal at least to that shown by the same exhibitor at the International Show of 1912; second, Mr. G. S. W. Harrison, Walbottle-on-Tyne. The same exhibitors were also first and second respectively in the class for vases of white self Violas and one of yellow self Violas. The best vase of edged Violas was shown by Mr. Harrison; second, Mr. J. S. Phillipson. For a vase of dark self Violas Mr. Bell was placed first; and he also had the best vase of fancy Violas; second, Mr. Harrison.

DUMFRIES AND DISTRICT HORTICULTURAL.

THE annual show of this society was held in the Drill Hall, Dumfries, on August 28. The show was opened by Mrs. Landale of Palswinton, the chair being occupied by the president of the society, Provost S. Arnott, Maxwelltown. The entries, which numbered about a thousand (in addition to those in the honey and allotment sections, arranged respectively by the South of Scotland Beekeepers' Association and the Dumfries Burgh Allotments Association), showed a distinct advance in numbers and quality over last year. Cut flowers and Grapes, especially, marked a great improvement, and some splendid exhibits were forthcoming. Messrs. Oliver and Hunter, Montrose, exhibited a collection of vegetables, for which a special award was made. Messrs. Learmont, Hunter, and King, Ltd., Dumfries and Maxwelltown, exhibited Dahlias, Sweet Peas, etc. Mr. John Croall, Dumfries, showed Sweet Peas and other flowers and floral designs. Messrs. Barr and Sons, Dumfries, sent Roses, etc. Mr. J. Nicholson, Douievale, exhibited Sweet Peas and Tomatos.

Cut flowers were very fine considering the character of the season in the district, and were much better than last year. The leading class for a collection of hardy border flowers resulted in a spirited competition, the first prize falling to J. Davidson, Esq., Summerville (gr., Mr. J. Wilson), for a very fine exhibit. H. S. Gladstone, Esq., Capenoch (gr., Mr. D. Campbell), was a good second. In the principal class for a collection of Sweet Peas, Major Keswick, Cowhill Tower (gr., Mr. C. G. M. Murray), was placed first for magnificent flowers. Other leading winners for cut flowers were Mr. D. Airdrie, Terregles Gardens; D. Landale, Esq.; Major Keswick; J. Davidson, Esq.; Mr. T. J. James, Carlisle; W. H. Maxwell Esq., Steilston (gr., Mr. J. Chalmers); and Mr. D. J. Maxwell.

Fruit was excellent, though some classes were weak in numbers, owing to the small crop. Grapes were exceptionally fine, and the competition more extensive than for many years in Dumfries. John Primrose, Esq., Arindel, Maxwelltown (gr., Mr. J. Allan), led in the leading Grape class, and won several other first prizes in the section. Other prize-winners were H. S. Gladstone, Esq.; Col. Sir C. Laurie, Bt., Maxwellton House (gr., Mr. F. Maxey); D. Landale, Esq.; and Mr. D. Airdrie.

Vegetables were good, and the classes well filled. D. Landale, Esq., was awarded the first prize for a collection. C. Logan, Esq., being a good second. The "Courier and Herald" cup offered for the winner of most points in the show was won by Mr. D. Landale; the "Standard" cup for vegetables grown by amateurs and allotment holders by Mr. D. Walleit, Castle Douglas; the cup for Cactus Dahlias by Mr. T. J. James; the cup for Gladioli by Mr. D. Airdrie; and the Dumfries Burgh Cup for the best allotment by Mr. T. Douglas.

The attendance at the show was good, and constituted a considerable advance upon last year. A sale of flowers and other produce was arranged for the benefit of the Royal Gardeners' Orphan Fund.

SANDY AND DISTRICT HORTICULTURAL.

AUGUST 26.—Sandy Flower Show was held on this date in the grounds of Sandye Place, the residence of Mrs. Graves. The weather was beautifully fine, and there was a record attendance of upwards of 15,000 visitors. The amount taken at the gate realised £1,218 8s. 4d., which also constitutes a record.

The exhibits in the horticultural section, notwithstanding the sunless and wet season, provided some exceedingly choice vegetables and fruit, and in most cases the classes were well filled, competition being very keen. The number of entries in the dead stock section totalled 1,610.

Messrs. J. CYPHER AND CO., Cheltenham, exhibited a magnificent group of ornamental foliage plants, and also a group of miscellaneous plants, and were awarded the 1st prize in both cases. The best miscellaneous group of plants arranged for effect in a space of 10 feet by 10

feet, open to all, except nurserymen, was shown by C. A. CAIN, Esq. (gr. Mr. T. Pateman); 2nd, Major PHIPP; 3rd, FRANCIS PYM, Esq. For a collection of vegetables in eight distinct varieties, there were no fewer than 14 entries, and the exhibits were considered the best ever seen at this show. The 1st prize was awarded to Mr. TAYLOR, Irchester.

Fruit was well shown. For a collection of 10 dishes of hardy fruit, open to all, C. A. CAIN, Esq., was placed 1st. F. PYM, Esq., 2nd, and A. FLOWRIGHT AND SON 3rd. Mr. CAIN was also placed 1st for 6 dishes of ripe dessert fruit. This exhibit was awarded in all 24 1st prizes, 10 2nd prizes, and three 3rd prizes. Other successful exhibitors were Major Phipps, Francis Pym, Esq., and Mrs. Farley.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL.

SEPTEMBER 1.—This society held its annual show in the Saint Andrew's Halls, Glasgow, on the 1st inst. The entries numbered about a thousand, a decrease of about fifty as compared with last year. The exhibits of Roses were very good, and there were many excellent Sweet Peas. The prize for the best vase of Roses in the show was awarded to Mr. William Carle, Crossmyloof; Mrs. Russell, Newton-Mearns, was also a prominent exhibitor of Roses. Sweet Peas were shown finely by Mr. James Paul, Killearn.

The premier award for early flowering Chrysanthemums went to Mr. John Mason, Drymen, and another successful exhibitor of Chrysanthemums was Mr. Claude Jenkins, Cambuslang. The displays of colerette, cactus, and pompon Dahlias were very good. The principal prize-winners in this section were Mr. Smellie, Bushby, and Mr. Jenkins, Cambuslang.

The exhibits of fruit were not quite so good as those seen at some former shows, but fruit from under glass was of more than average quality. The first prize for eight bunches of Grapes was won by Mr. Samuel Gordon, gardener to Sir Herbert Maxwell, Bart., Moureith. Mr. Gordon was awarded the "Thomson" Challenge Cup, which he has now won outright, having gained it on three successive occasions. The entries in the classes for hardy fruits were not numerous, but the quality in most cases was excellent.

The vegetable classes constituted an important section of the show; large numbers of attractive exhibits were staged by well-known professional and amateur growers, while in the classes set apart for allotment holders there were many creditable entries. In the class for a collection of vegetables, Mr. John Gray, Uddingson, was a conspicuous winner.

The attractiveness of the show as a whole was greatly enhanced by a number of exhibits from well-known firms in the seed industry in Scotland and England. Outstanding exhibits were the collections shown by Messrs. Austin and M'Aslin, Glasgow; Messrs. Dobbie and Co., Edinburgh; and Messrs. Storrer and Storrer, Glencarse, Perthshire, all of whom were given special awards.

ANSWERS TO CORRESPONDENTS.

APPLES DEFORMED: J. W. The deformity is caused by imperfect fertilisation of the flowers; you will notice that very few pips, if any, have formed.

BLACK CURRANT LEAVES DISCOLOURED: J. L. Your Black Currant bushes are suffering from an attack of leaf-spot fungus (*Gloeosporium ribis*), a disease which sometimes causes a great deal of trouble. Gather all the fallen leaves and burn them. During the winter spray the bushes with a solution of sulphate of iron (2 pounds to 5 gallons of water) before the leaf buds expand, and next spring spray the newly-expanded foliage with weak Bordeaux mixture.

BROWN TIPPED ORCHID LEAVES.—O.: The browning of the tips of the *Odontoglossum* leaves suggest that the plants have suffered a severe check, caused probably by a low temperature or excess of moisture at the roots and in the atmosphere. Impure atmospheric conditions, such as obtain in or near large manufacturing districts, will also sometimes cause the leaves of *Odontoglossums* and *Oncidiums* to turn brown.

CHEMISTRY OF THE GARDEN.—J. E. H.: We recommend you to obtain *Chemistry of the Garden*, by Herbert H. Cousins. This work may be obtained from our publishing department post free for 1s. 6d.

DISEASED PLANTS: A. L. S. Climatic conditions may have favoured the spread of fungous disease in your garden, but in all probability poor cultivation and the presence of abundance of weeds are chiefly responsible for the unhappy condition of the plants. The fungus on the Groundsel is *Bremia lactucae*; the rust on the Spurge is a species of *Melampsora*; the black spot on the Rose is caused by *Actinonema*; while the spotting on the Strawberry leaves is due to the presence of a species of *Mycosphaerella*. In each case a distinct species of fungus is present and confined to the particular plant. An effort should be made to thoroughly clear the garden of weeds and to trench and manure all vacant ground in the autumn.

EGGS ON AN APPLE SHOOT: F. L. C. The eggs are those of the Lackey Moth (*Clissocampa neustria*). It is necessary to destroy all the bands of eggs and to spray the plants next spring with an arsenical wash. Thick grease bands placed around the trunks of the trees will prevent any of the larvae that may be on the ground from ascending again.

GARDENER'S NOTICE TO REMOVE FROM COTTAGE.—E. M. D.: Your employer cannot turn you out of the cottage until you are able to obtain suitable accommodation for yourself and family. The length of notice to quit his service depends upon the arrangements made when you were engaged.

GUMMING OF PEACH TREES.—J. D. B.: The unhealthy condition of the tree is due to gumming. The tree may have received some injury, or the knife may have been used too freely during pruning operations. Gumming sometimes occurs at the junction of stock and scion when a proper union has not been effected.

HEATING APPARATUS FOR A SMALL GREENHOUSE.—J. B. G.: It is quite possible to obtain a hot water apparatus in which heat may be generated by paraffin or some similar oil. An apparatus of this character is quite distinct from one in which coal or coke is the heating medium. We believe Messrs. Toope and Son (The Boat House, Kew Bridge, Kew, Surrey) will be able to advise you on this matter.

NAMES OF FRUITS: A. C. The Gooseberries must have been dead ripe when packed, consequently they reached us in a more or less pulped condition, and it was impossible to determine the varieties.

PALM SEEDS.—A. G. N.: Your best plan will be to place the Palm seeds in partly decayed Cocoa-nut fibre refuse in a box or pan and place the pan over a bottom heat of 70° to 80° Fahr. As soon as the seeds germinate put them in small pots in a moderately sandy mixture of loam and peat. As the Palms are of tropical kinds, a stove temperature will be necessary for them, and while they are in a young state the pots should be plunged in Cocoa-nut fibre refuse in a position near the roof-glass.

Communications Received.—R. A.—J. P.—G. L.—S. O.—J. A.—D. M.—T.—C. A.—B.—W. A.—A.—E. A.—F. D.—F. G.—W. W.—F. T.—W. J.—G. R. N.—C. F.—L. H.—D.—A.—E. S.—F. K.—W.—K.—R. and Co.—I. L.—R. E.—F. A.—T.—B.—K.—S.—W.—C.—G. A.—Tennis Court.—G. W. R. S.—W. E.—T. D.—E. H. J.—A. E. J.—H. N. E.—J. M.—J. H.—N. S.—W. J.

THE Gardeners' Chronicle

No. 1761.—SATURDAY, SEPT. 25, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich 54.3°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, September 22, 10 a.m.; Bar. 30.16, temp. 62°. Weather—Dull.

The Orchard Survey of the West of England.

The survey of West of England orchards promoted by the Horticultural Division of the Ministry of Agriculture and by the Research Station at Long Ashton formed the subject of a paper read by Captain Wellington before the Agricultural Section at the British Association. Captain Wellington was one of Dr. Keeble's chief colleagues at the Ministry, and did most valuable work in promoting horticulture at the Ministry. In his account of the orchard survey, Captain Wellington drew attention to the two different types of fruit growing practised in this country. The one—intensive fruit farming—consists in cultivating fruit as the chief crop. On such holdings, which range from 2 or 3 up to 500 or 1,000 acres, whatever the other crops may be, fruit crops occupy the larger part of the holding. The second type—extensive fruit farming—consists in the cultivation of fruit generally over only a small area and in grass orchards; in these farms fruit occupies a subordinate position and the area devoted to it rarely exceeds 10 acres. As Captain Wellington pointed out the methods of cultivation adopted in these systems differ fundamentally from one another. The intensive fruit grower cultivates his fruit in as thorough a manner as his capital and labour allow. He cultivates his land, manures, prunes and sprays his trees and attends closely to the business of marketing. The farm orchardist, on the contrary, generally pays little regard to the trees in his orchard, seldom prunes and rarely sprays them, and not infrequently allows his cattle to damage the trees, paying more heed to grass keep which the orchard land provides than to the trees therein. Any crop which comes he takes and disposes of it with but little knowledge

of markets or values. When he replants in the place of dead trees he is not generally careful in the choice of varieties, and hence his orchard is apt to contain an unduly large number of varieties, some of which are worthless. This latter type of farm orcharding is practised largely in western counties—Devon, Somerset, Gloucester, Worcester, Hereford, Monmouth and Wilts. Captain Wellington estimates the area of farm orchards in these counties at upwards of 80,000 acres, and states that the survey will show that for every acre of Apples and Pears cultivated in a proper manner, there is to be found an acre or more improperly cultivated. In view of these facts it is not surprising that the area of these farm orchards is undergoing a rapid reduction estimated as amounting to some 27,500 acres since 1910. These extensively cultivated orchards in the west date far back, and many orchards of this type were established in times when culinary and dessert varieties of Apples and Pears had but little commercial value. The fruit trees were planted in part to supply the homestead, but chiefly for the manufacture of cider, in most cases for the farm hands—but sometimes for sale off the farm. The decay of this payment by way of perquisite set in ten years ago, and it received its death blow by the orders of the Agricultural Wages Board prohibiting the giving of cider as a perquisite for which deduction of wages could be made. In consequence of this change of custom many farmers, in replanting, have substituted commercial varieties for cider varieties. The situation is to 15 years ago was that large quantities of cider were made on the farm for home consumption, in certain farms also sufficient trees of a variety were grown and the fruit sold to manufacturers of standard quality ciders, and a little fruit found its way to the market in times when the home crop was short. For many years about this period the prices realised for such poor quality fruit as was growing in the farm orchards were very low—say £1 10s. per ton, and with such a price it is not surprising that the farmer took but little interest in his fruit. Captain Wellington regards the farm orchards at the present time as a menace to the extensive fruit grower; for the low quality produced from the farm orchard can be put on the market at a price which may cause a slump to all except the highest quality fruit. The restrictions of imports of fruit which took place during the war have had this effect that it has placed an inflated value on the poor class of fruit grown by the farm orchardist, who has learned how to market his goods. Captain Wellington attributes the neglected state of many west country farm orchards to economic causes and to lack of skilled knowledge of orchard management. He believes that neglect is due less to the form of tenure—short-term agreements—to which farmers are apt to ascribe it—than it is to the fact that the covenants and agreements between landlords and tenants are no longer observed in practice. "If tenants had carried out what they had agreed to do, and if landlords had kept their tenants up to the mark," the present neglect would not have occurred. Short-term tenancies are deterrents of renovation rather than cause of neglect. In any case, if the provisions in the Agricultural Act permitting the Evesham custom to be applied to certain portions of a holding come to be applied to the farm orchard this reason for failure to renovate the orchard will disappear. With that gone and with the prospect of a remunerative market for some years to come,

the only need is to make good the present lack of skilled management. The Committee in charge of the survey therefore recommend that energetic steps be taken to supply instruction through the County Horticultural staffs, particularly in the planting of orchards, the choice of varieties, methods of renovation and of cultivation. Whether growing for cider can be restored is doubtful. It could, if proper co-operative methods were introduced, but this is bound to prove difficult. Captain Wellington concluded by declaring that the extensive system of fruit growing must be improved, and the cost of production in intensive fruit growing must be reduced, and that then the interests of the two sections will not be so antagonistic as they are to-day, but will lend support to one another in establishing a flourishing industry.

End of Summer Time.—Public clocks are to resume Greenwich time as from 3 a.m. (summer time) on September 27.

Gift of a Rock Garden for a Public Park.—Sir Alexander Walker has generously offered to defray the expense of the formation and planting of a rock garden in the Bellfield Park, Kil-marnock, which is under the control of the Bellfield Trust. A letter to this effect was read at a meeting of the Trust, held on September 13, when it was resolved to accept the offer, and to thank Sir Alexander Walker for his generosity.

Kew Gardens.—One of the most interesting and beautiful features at Kew at the present time is a large bed near the large Palm house, planted with *Montbretias* and *Watsonia Meriana* var. *Ardernei*. The same bed has been interesting for a long season for the *Montbretias* and *Watsonia* follow a display of *Lilium regale*, and is a good example of how a beautiful floral display may be maintained over a long period by a judicious selection of subjects. The *Kniphofias* on the terrace near the T range of plant houses, have been and still are very fine. *Kniphofias* are usually extra fine in wet summers, as these plants enjoy plenty of moisture during their growing season; although damp is their greatest enemy during winter.

Appointment of Horticultural Superintendent for Middlesex.—The Middlesex County Council has appointed Mr. James Lawson horticultural superintendent for the county. No fewer than 335 applications were received for the post, which is one of the most important of the kind in the country. Fruit-growing and market-gardening form very important industries in Middlesex, and the nearness of the Metropolis ensures a favourable market for the growers. The county is to be congratulated in securing the services of one who is well acquainted with the best methods of fruit-growing and market-gardening, for Mr. Lawson's experience in the Swanley district extends over many years, and his success as a fruit grower has been demonstrated at the chief exhibitions; he has won the R.H.S. Gold Medal for exhibits of fruit on four occasions. Mr. Lawson is well known at the Metropolitan and other important shows, and his genial personality will be a valuable asset in his new post. He was trained at Kinnaird Castle, Forfar, and he has filled the posts of garden superintendent at Studley College for three years and at Swanley College for nine years. For the past seven years he has managed Messrs. H. Cannell and Sons' fruit nursery at Eynsford, in the Swanley district.

The Unseasonable Weather.—Exceptionally low temperatures for so early a period in the autumn were recorded over a large part of the United Kingdom during Sunday night, the 19th inst., as a result of the clear skies and a cold northerly wind originating near the Arctic circle. Frost was recorded at several places including Howden (Yorks), Manchester, Ross-on-Wye, South Farnborough, and Benson. During the day the maximum

was below 60 deg. throughout the northern half of the country, failing to pass the remarkably low level of 47 deg. at Nairn, where hail showers occurred. In the south the highest figure registered was only 65 deg. at Folkestone. Torrential rains have fallen in many places during the early part of the week. On Tuesday, the rainfall at Margate measured 2.33 inches, while several other stations recorded a fall of more than one inch.

National Chrysanthemum Society's Meetings.

—The National Chrysanthemum Society commenced its work for the season 1920 on Monday last, when the Floral Committee met at Essex Hall, and the General Committee, later in the day, at 35, Wellington Street, Covent Garden. On the following day the society held a small exhibition of early flowering Chrysanthemums (see p. 160) in conjunction with the Royal Horticultural Society's meeting, at Vincent Square. Raisers of new Chrysanthemums should bear in mind that the Floral Committee of the N.C.S. holds its meetings on Mondays, and the dates are: October 4, October 18, November 15, November 29, and December 13. These meetings are held at Essex Hall, Essex Street, Strand, at 3 p.m., and members of the society are admitted about 3.30 p.m. There is, however, one exception to this rule: on the occasion of the society's chief exhibition, to be held at the Royal Horticultural Hall on Tuesday, November 2, when the Floral Committee will meet in the same hall at 11 a.m. The meetings of the Society's Executive Committee will be held at 35, Wellington Street, Covent Garden, at 6 p.m., on October 25, November 15, and December 13.

American Gooseberry Mildew.—Nurserymen and others who grow Gooseberry bushes for sale should watch their bushes very closely at this time of the year. Owing to the wet summer these bushes are making much fresh growth at the present time, and, as a result, numerous cases of American Gooseberry Mildew are occurring. Such cases should be at once notified to the Ministry of Agriculture as required by the American Gooseberry Mildew Order of 1919, so that the Ministry may be assured that proper measures to check the further spread of the disease are taken. In cases where nurserymen and others do not comply with the provisions of this Order, the Ministry has no alternative but to prosecute the offenders. Notification is not essential unless bushes are grown for sale. The fact that a nurseryman reported the presence of the disease on his premises in previous years, does not excuse him from again reporting should it reappear during the present season.

The Ontario Apple Crop.—The Department of Agriculture of the Ontario Government reports that the Apple market is livelier than for several years past. Many orchards are heavily laden with Northern Spy and other popular varieties and good prices are being offered. A crop estimated at 8,000 barrels, owned by a number of growers near Wellington, sold for nine shillings a barrel on the trees, without any expense to the orchardists. Other Apple-growers in Prince Edward county have received as much as £1 a barrel for Nos. 1 and 2, f.o.b.

Mr. George Caselton.—Our readers will remember that late in 1917 a fund was raised for the purpose of assisting Mr. George Caselton, formerly superintendent of the Crystal Palace Gardens, who had been practically bed-ridden for several years and whose only income at that time was the £20 per annum received from the Gardeners' Royal Benevolent Institution, and a small amount every week from a club to which he belonged. The fund was raised by Mr. John Green, Mr. Richard A. Witty, and Mr. Charles H. Curtis, all officers of the National Chrysanthemum Society. The sum obtained by donations, in amounts varying from a few shillings to £20, totalled £140 ls. 6d. Part of this sum was placed on deposit and realised £2 5s. 9d. by way of interest, while rebate on unused cheques came to 1s. 5d., making a total on the receipt side of £142 8s. 8d. The sum of £141 ls. 6d. was forwarded to Mr. Caselton at the rate of £1 per

week, Mr. C. H. Curtis acting as almoner. Postages and cheque book charges came to £1 7s. 2d. The fund has now been closed and the accounts duly audited by Mr. A. C. Bartlett, who reports that it is somewhat unusual for a fund of this character to pay out a larger sum than was received in donations. It should be added that Mr. J. B. Linford supplied the necessary printing, free of charge, and that on the occasion of the recent meeting of the N.C.S. Executive Committee, Messrs. J. Green, R. H. Witty, J. Linford and C. H. Curtis were heartily thanked for their work in connection with this relief fund. We understand that although Mr. Caselton is still confined to his bed, his immediate financial needs are not so great as they were in 1918 and 1919, as he has received a small legacy which will bring him in, for about a year, an amount very similar to that provided by the fund referred to. Mr. Caselton is deeply grateful to all who have come to his assistance during his illness and distress.

Fungus Foray in Somersetshire.—The twenty-fourth Autumn Fungus Foray conducted by the British Mycological Society will be held from Monday, September 27, to Saturday, October 2, at Minehead, Somersetshire. Members will assemble at the Wellington Hotel, Minehead, on Monday, September 27. Inclusive terms have been arranged at 15s. 6d. a day. Those who have not already booked their rooms should write to the Manager, stating if single or double rooms are wanted. The following Meetings and Excursions have been arranged:—Monday, September 27, Council meeting at 8.45 p.m. On Tuesday, September 28, a start will be made from the Hotel at 10 o'clock. Members will be taken by motor car-a-bancs to the Horner Woods. In the evening at 8.45 the annual meeting of the Society will be held to consider the adoption of accounts, a resolution to increase the annual subscription to £1, the election of officers and council, the place for next year's meeting or meetings, and any other matters members wish to bring forward. On Wednesday, September 29, members will leave at 12 o'clock for the woods at Selworthy and in the evening, at 8.45, Mr. T. Peitch will deliver his presidential address on Fungi Parasitic on Scale Insects. On Thursday, September 30, Porlock Woods will be visited, and papers read during the evening will be on The Action of Gravity on the Fungi, by Dr. Harold Wager, F.R.S.; The Genus *Ganoderma* (Karst) Pat, by Mr. Carleton Rea; and The Mycorrhiza of Orchids, by Mr. J. Ramsbottom. There will also be an exhibition of A Yeast (*Mesodermomyces*) Cultivated in Tea, by Mr. J. Ramsbottom. On Friday, October 1, members will leave Minehead Station at 11.20 a.m. for Dunster, returning by 3.56 or 6.32 train; the papers for the evening will be on The Audibility of the Puffing in the Larger Discomycetes, by Prof. A. H. R. Buller; and The Sporulating Gonidia of *Evernina Prunastri*, Ach., by Mr. R. Paulson; to be followed by an exhibition of A Canvas Destroying Fungus, by Mr. J. Ramsbottom.

Results of Experiments with Rock Phosphates.—Owing to the changed economic conditions and to a certain extent to other reasons, the manufacture of steel by the basic Bessemer process is no longer a sound proposition. This process has given place to the basic open hearth method, and the resulting basic slag is of low grade. The old basic Bessemer slag, containing from 36-44 per cent. of phosphate of lime belongs to the past, and its place has been taken by an open hearth basic slag, containing only from 12.26 per cent. of phosphate of lime. Moreover, owing to the introduction of fluorspar into the furnace, a very large proportion of the open hearth basic slag has a solubility in citric acid of from 10-30 per cent., compared with 80.90 per cent. in the case of basic Bessemer slags. It is clear that the supply of open hearth basic slag will fall far short of the demand, and it is of considerable importance to give due consideration to other sources of insoluble phosphates. Experiments extending over a period of five years on meadow hay at nine different experimental stations in Essex have shown that rock or mineral phos-

phates, particularly the North African phosphates, are capable of giving results practically as good as those secured with the best grade of basic Bessemer slag, and, on the whole, superior to those obtained by the use of open hearth fluorspar basic slag. In the Essex experiments an initial dressing of the various phosphates, equivalent to 200 lbs. of phosphoric acid, was given, and during a period of five years there has been no further manurial treatment. The results show that on "sour" soils rock phosphates are strictly comparable with the best grades of basic slag. During exceptionally dry years, the high soluble slag has in some cases a slight advantage, but on an average of five years there is nothing to choose between the two types of phosphates. On soils well supplied with chalk the high soluble slags have an appreciable advantage, particularly during dry years, but even under such circumstances, rock phosphates are decidedly superior to open hearth basic slag. It may fairly be argued that if rock phosphates do so well under the dry conditions existing in Essex, then the results are capable of considerable application. The best types of rock phosphates for direct application are Gafsa, Algerian, Tunisian, and Egyptian. Just at present there is considerable difficulty in securing adequate supplies for the manufacture of superphosphates, but there are enormous deposits in North Africa, and when conditions adjust themselves, it should be possible to place on the market large quantities at a cost per unit of phosphate considerably less than that at present charged for basic slag.

Apple The Premier.—This new Apple is a dessert and not a culinary variety, as stated in the inscription under the illustration in Fig. 59.

Appointments for the Ensuing Week.—Saturday, October 2.—Peebles Chrysanthemum Society's Show; Innerleithen and Traquair Society's Show.

The "Gardeners' Chronicle" Seventy-Five Years Ago.—*Prevention of disease in Potatoes.*—Some inquiry has been made as to the probable advantage of dusting Potatoes with slaked lime, when they are pitted. It may be well to try the experiment; but we do not see what the lime is to do, beyond drying somewhat the surface of the tubers. Another important question is, whether applications of salt either naturally, as from the vicinity of the ocean, or artificially, as in manure, have had any tendency to keep the murrain off. We alluded to this matter last week, and then asked for information. It then appeared that two independent observers, one in England and the other in Flanders, had remarked that Potato fields near the sea were unaffected. A correspondent has since directed our attention to a statement in one of the daily papers that the crop is entirely free from disease wherever sea-weed has been used for manure. Is this true? Our Isle of Thanet friends can easily answer this question. In the meanwhile Mr. Ives, of Goldhill, near Gerrard's Cross, Bucks, informs us that last winter he sowed about 2 cwt. of salt to the acre on his field, and afterwards chalked it. This field, early in the spring, was planted with Potatoes, four or five sorts, and the result has been that while his neighbours have lost more than half their Potatoes from the fatal disease, his Potatoes have in a great measure escaped. He adds that the haulm is seized, and he had feared at one time that he should lose his crop, yet very few of the tubers are yet affected. He has taken up 40 bushels without a peck of bad ones. He attributes his success to the use of chalk and salt; the one absorbing the wet and the other acting as a preservative against infection. He has 3½ acres. He is of opinion that if he had sowed more salt he should have had a better crop still. His soil is a sharp gravel. On the other hand, a correspondent, whose gardener by mistake dressed his ground with 7 cwt. of salt instead of 2 cwt. as ordered, finds no advantage in the application. But here the over-dose may itself have done the mischief.—*Gard. Chron.*, Sept. 27, 1845.

FOREIGN CORRESPONDENCE.

A NEW CHINESE LILY.

In your issue of March 6, 1920, p. 115, Mr. Grove, describing a new Lily from Kansu, states that the only bulb of this plant originally came from me. May I say what I know about it? In 1903 Professor Fischer von Waldheim, Director of the Imperial Botanical Garden at St. Petersburg, sent me some Lily seeds saved in those gardens, and labelled *Lilium Browni kansuense*. A small batch of bulbs was raised from them, the first of which flowered in 1912, producing one flower. It appeared to me to be much like that of *Lilium regale*, as figured in Grove's *Lilies*, especially the stigma, which is almost like a Mushroom. I kept only that bulb; the others passed into the hands of an English specialist. Grown in a tub and kept dry in winter, my bulb again flowered in 1913, magnificently this time. It did not produce seeds or offsets here. This is the bulb Mr. Grove writes about. The plants sent to England also flowered in 1913. My correspondent reported about them, saying that in all essential details they appeared identical with *L. regale*, only they had a considerable amount of purple on the style, which he did not notice in any of his plants of *L. regale*; but this difference seemed an insignificant one.

From St. Petersburg I heard that their Lilies originally came from Kansu. They were brought home by one of their travellers and explorers. Mr. Grove's bulb is not one of the cross between *Lilium sulphureum* and *L. regale* which I made in 1913, and which flowered in 1916. Before the seeds of that cross ripened, the bulb was on its way to England. F. Sch. Oberachstein.

PLANT NOTES.

MARICA COERULEA.

This beautiful member of the Iridaceae, a native of Brazil, is not quite hardy, but may be grown in the greenhouse where a minimum temperature of 45° is maintained in winter. Its roots should be kept almost dry from November till March, but water should be given occasionally during the latter month, and the supply of tepid water increased as fresh growth begins, until it reaches an abundant and warmer supply as soon as the buds appear in July.

Nearly allied as it is to the Tigridias, it differs from them in possessing rhizomatous roots; and it is not herbaceous, but retains its Iris-like foliage throughout the year.

Its petals, six in number, are coloured very richly, and the three smaller of them curled in a singular manner, display the richest tones of purple on a creamy white ground, whilst the three outer petals are pure amethystine blue, of a tint which is difficult to represent by any pigment.

Both the claws of the outer and the inner segments are wonderfully tigered with deep crimson-brown on an apricot ground, forming a distinct central cup. Like the Tigridias, each blossom lasts but a day, and the flowers are produced in succession from a slight, erect scape, during July and August.

The stigmas are petaloid, and the leaves are 1½ inch in breadth, the whole plant reaching twenty inches in height. The cultivation of this rare and lovely flower is not difficult, if its need of rest in winter and increasing water and sunshine in spring is borne in mind.

Repotting is best done directly the plant has bloomed (*i.e.*, in the early autumn), when the roots may be divided if necessary. A mixture of good loam, with sand and charcoal in small lumps, forms a suitable compost; no animal manure should be added, but weak soot-water in a clear state may be given once a week, with clear water between each dose, always in a lukewarm state during the summer.

The breadth of the flower is between three and four inches.

Marica coerulea is sometimes called *Cypella coerulea*, under which name it is illustrated in *Bot. Mag.*, tab. 5,612. J. L. Richmond.

TREES AND SHRUBS.

JASMINUM.

The various Jasmines are favourite plants both for indoor and outdoor cultivation on account of their sweetly-scented flowers. Many species are invaluable for covering pillars and rafters of the greenhouse or conservatory. Others grow and flower freely as pot plants. For the warm, greenhouse or conservatory *J. gracillimum* is by far the best and most distinct species: it is a charming plant, the delicate and sweet perfume of its blossoms, together with their graceful, free disposal upon almost all the young growth, more copiously produced than by any other species, gives it a rightful claim to be grown.

Jasminum gracillimum is suitable for cultivating as a winter flowering plant, and may be grown in pots. It was discovered in Borneo, and sent home to the firm of Messrs. James Veitch and Sons, Chelsea, by their collector, the late Mr. F. W. Burbridge. He espe-

April to July, may be grown as a pillar or pot plant.

J. primulinum is a beautiful plant with large, bright yellow blooms, which are sometimes semi-double. They are produced in great profusion during the spring. The foliage is bright green, and almost evergreen. Plants grown in pots and placed out of door during the late summer and autumn to ripen the wood, and wintered in a cool greenhouse or vinery, will make a fine display the following spring. If planted out of door in a warm border, in a sheltered, sunny situation against a wall, this species will flower freely if given a little protection during very severe weather. For cultivation out of door the fragrant, white-flowered *J. officinale* grows and flowers freely in the suburbs of London.

J. nudiflorum, a fine deciduous, yellow-flowered species, blooms freely against a south-west wall during the months of December and January. *J. floridum*, *J. fruticosum*, *J. revolutum*, and *J. Wallichianum*, are all good yellow flowering species. The two last require to be planted in a south-west aspect. John Heal, F.M.H.



FIG. 66.—PYRUS MUNDA SUBRACHNOIDEA.

PYRUS MUNDA SUBRACHNOIDEA.

Pyrus munda subrachnoidea (see Fig. 66) and *Pyrus scalaris* are two of the most refined and elegant members of the Mountain Ash section of the Pear family, with which the wealth of China and the enterprise of the well-known collector, Mr. E. H. Wilson, have provided us. The remarkable and, so far as my experience goes, unique feature of the plant here figured is that the fruits, instead of being scarlet or crimson, are, when fully ripened, of a dazzling pearly whiteness, and, though more conspicuous, are comparable in colour to the fruits of *Margyricarpus setosus*, and of *Hymenanthera crassifolia*. Unluckily, the fruits are as palatable to birds as those of any other Rowan tree, and when they once start on it they do not stop till they have made a clearance. My plants of *P. scalaris* have not yet fruited, but I see from *Plantae Wilsonianae* that they are 5 mm. in diameter and red in colour. Another *Pyrus* in the same style as the two above-mentioned is *P. Vilmorinii*, better known under the synonym *P. foliolosa*, which also has small, pinnate leaves, but of which the small, freely-borne fruit is pale rose red. This plant was introduced to France by my old friend, M. Maurice de Vilmorin, in 1889, and first reached this country in 1905. Vicary Gibbs

J. angulare is one of the best species for the cool greenhouse or conservatory, most suitable for clothing pillars or rafters. This is a very free-flowering white species with bright green foliage and is an almost continual bloomer.

J. gracile (*syn. J. simplicifolium*), a free flowering white species, makes a good plant also for training to pillars or rafters. *J. grandiflorum* has white flowers, reddish underneath, which are freely produced during the summer; this is also suitable for pillars or rafters. *J. odoratissimum*, a yellow-flowering plant, with very sweetly-scented blossoms, produced from

Pyrus munda subrachnoidea (see Fig. 66) and *Pyrus scalaris* are two of the most refined and elegant members of the Mountain Ash section of the Pear family, with which the wealth of China and the enterprise of the well-known collector, Mr. E. H. Wilson, have provided us. The remarkable and, so far as my experience goes, unique feature of the plant here figured is that the fruits, instead of being scarlet or crimson, are, when fully ripened, of a dazzling pearly whiteness, and, though more conspicuous, are comparable in colour to the fruits of *Margyricarpus setosus*, and of *Hymenanthera crassifolia*. Unluckily, the fruits are as palatable to birds as those of any other Rowan tree, and when they once start on it they do not stop till they have made a clearance. My plants of *P. scalaris* have not yet fruited, but I see from *Plantae Wilsonianae* that they are 5 mm. in diameter and red in colour. Another *Pyrus* in the same style as the two above-mentioned is *P. Vilmorinii*, better known under the synonym *P. foliolosa*, which also has small, pinnate leaves, but of which the small, freely-borne fruit is pale rose red. This plant was introduced to France by my old friend, M. Maurice de Vilmorin, in 1889, and first reached this country in 1905. Vicary Gibbs

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Cheshpew.

Cypripedium bellatulum.—This delightful *Cypripedium* belongs to a charming group of Orchids characterised by their dwarf habit, and exquisite flowers which render them distinct from all other members of the genus. Others of this section are *C. Godefroyae*, *C. concolor*, and *C. niveum*. Of the several hybrids which have been raised the best, perhaps, is the chaste *C. Venus*, which is the result of intercrossing *C. insignis* *Sanderæ* with *C. niveum*. These *Cypripediums* do not need frequent disturbance at the root, but at the same time the potting compost should be kept in a sweet and wholesome condition. They are not considered easy subjects to grow, but if the right spot can be found, which often varies in different collections, they grow freely, and give a generous return in the way of flowers. Large pots or pans are not required, and on no account should plants be over-potted, and for drainage broken bricks or lime rubble should be used. The rooting medium consists of the best fibrous loam two parts, and one part good quality peat, with a generous sprinkling of crushed lime rubble. The best time for any repotting to be carried out is immediately after the flowering period, for at that stage fresh root action will be in evidence. Break the soil into pieces about the size of a Walnut, and remove all fine particles. Before repotting shake out all the old soil, and cut away dead roots and any decayed leaves around the base of the plants. Make the compost fairly firm, but in doing so care must be taken to prevent any injury to the thick fleshy roots, and when the operation is completed give sufficient water to wet the whole of the soil, when no more will be needed for a week or so. Careful watering is essential at all times, and more especially during the autumn and winter months, when only enough should be given to maintain the foliage in a plump and healthy condition. To prevent any water accumulating in the axils of the leaves, the pots may be dipped in a pail of water in such a way as to wet the whole of the soil without any moisture reaching the centre of the plants. Choose a shady corner of the warm division, and stand each plant upon an inverted flower-pot to bring it nearer the roof glass, and also to prevent the plants from becoming too wet at the base during the process of damping down. Throughout the summer months syringing between the pots will be necessary, but during the autumn and winter the atmospheric moisture in the house will suffice. A watch must be kept for drip from the roof rafters, or a few plants may soon be injured.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire

Preparations for Planting.—In view of the nearness of the season for harvesting Apples and Pears, it would be well to examine carefully and make notes of any unprofitable and exhausted trees, with a view to replacing them by young trees of such varieties as do well in the particular district. It is impossible to recommend varieties that will do well in all soils and districts, therefore intending planters should be careful in their selection and choose only those that are known to thrive in their own locality. If in any doubt as to which varieties will succeed, it will be advisable to consult a local grower and act on his advice. For small gardens, I would recommend the following varieties of Apples for dessert purposes:—Irish Peach, St. Everard, James Grieve, American Mother, Rival and Cox's Orange Pippin. Those who

have room, and wish to extend their list, may plant The Houblon, Worcester Pearmain, Chas. Ross, Ribston Pippin and William Crump. As culinary varieties, to furnish a succession of fruits, I recommend Grenadier, Norfolk Beauty, or Warner's King; Lane's Prince Albert and Newton Wonder. Good exhibition varieties include Peasgood's Nonsuch, The Queen, Emperor Alexander, Rev. W. Wilks, Lord Derby, Hambling's Seedling, Mère de Ménage, Gascoyne's Scarlet and Striped Beefing.

Pears.—The following varieties of Pears may be grown for succession: William's Bon Chrétien or Clapp's Favourite, Beurre d'Amanlis, Fondante d'Automne, Beurré Superfin, Conference, Emile d'Hevest, Doyenné du Comice and Josephine de Malines. Other varieties to extend the list are Marguerite Marillat, Marie Louise, Louise Bonne of Jersey, Pitmaston Duchess, Chas. Ernest, Beurré Alex. Lucas and Santa Claus. As fruit trees are likely to be planted extensively this season, intending planters will do well to place their orders early with the nurseryman.

Apples.—Although August was exceedingly cold, especially at night and in the early morning, Apples are developing rapidly. The best fruits will need to be supported as advised for Pears. Wherever possible the heaviest fruits should be supported by the use of matting, and fastened to the branch. Sometimes fish netting is used as a support, but often to the disfigurement of the fruit. Apples should be fully exposed to the sun to produce high colour and good flavour. All leaves that overhang the fruits should be removed entirely, or tied back. Afford water to young trees that are carrying heavy crops, and keep the hoe constantly at work around the trees to prevent the soil from becoming hard on the surface. It is only by paying attention to these small details during the last stages of development that perfect and highly coloured fruits are obtained.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Peaches.—The work of lifting and root-pruning the trees and renovating the soil of early Peach borders should be completed forthwith. The summer and autumn has been generally favourable to the trees ripening their wood, and large specimens that were root-pruned last season may now be lifted with perfect safety and transferred to another position. The removal of large trees should, as a matter of course, be done quickly, and it is important that the soil should receive one or two good waterings before lifting the trees. Peach trees which are kept in good condition by annual attention will lift easily and soon recover when placed in a fresh position, provided the soil is well soaked with tepid water to settle it about the roots. Tie the tree loosely to allow for the roots settling down, keep the house somewhat close, use the syringe frequently, and shade the roof-glass for a few days if necessary. Treated carefully in this way, large trees in full leafage will become re-established in a month or so, and, given ordinary attention afterwards, will be ready for forcing with the other trees. Where former directions have been carried out, pruning will be a very light matter, merely requiring the removal of a shoot here and there to balance the trees. The pruning of undisturbed trees at this season consists merely in the removal of the old fruiting wood, and all rough snags. Do not shorten bearing wood, rather remove a shoot altogether to ensure the proper balance of the trees. When the house and trees have been thoroughly cleansed, and necessary repairs and painting done, tie the shoots to the trellis, six inches apart.

Late Houses.—Thin the wood of late Peach trees as soon as possible to allow light and air to reach the shoots, and ventilate on a liberal scale. Fumigate or syringe the trees with an insecticide where there is any suspicion of insect pests being present, and wash the trees frequently with the hose.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe
Castle, near Cardiff.

French Beans.—To maintain a supply of French Beans it will be necessary to resort to inside culture. Use seven-inch pots and fill them with good loamy soil, inserting six seeds in each to the depth of an inch, eventually filling the pots with top dressings. Water the soil sparingly until the plants have made good growth, when they should be syringed frequently overhead to prevent attacks by red spider. The frames in which these plants are growing should be closed at night and be protected with mats. Gathering the pods as they become ready must be closely attended to, and the plants will need to be supplied with manure water.

Cabbage.—Plants from seeds sown during the second week in August are ready for transplanting. Allow a distance of fifteen inches to twenty-one inches apart each way, according to the size of the varieties. Where the former Cabbage-bed has been retained to produce greens during the autumn, the plants should have all decaying foliage removed, and the ground between them thoroughly cleaned.

Seakale.—The growth of Seakale is now finishing, and the plants will require to be gone over occasionally to remove the decaying lower leaves—at the same time clean and stir the ground they occupy. This will expose the crowns to the sunlight and prove of considerable benefit to plants grown for early forcing.

Cardoons.—The earliest of these plants should now be blanched. After removing useless, outside leaves, a rope of twisted hay should be lightly bound around them, keeping this below the hearts, that future growth may not be restricted. Further binding should be added later as required. Earthing up should be done in the manner advised for Celery. About nine weeks should be allowed to secure the requisite blanching.

General Remarks.—During September, weeds grow very quickly, and to save future trouble they should be cleared away before there is any likelihood of their seeding. These and garden rubbish accumulate very quickly, and advantage should be taken of dry weather to burn them on the garden fire. The ash residue from the fire should be screened and stored in a dry place; its uses in the garden are manifold.

PLANTS UNDER GLASS.

By JOHN CUTTS, Foreman, Royal Botanic Gardens,
Kew.

Pot Roses.—Roses in pots should now be overhauled, repotting them where necessary. If the soil is in good condition remove a few inches from the surface, and apply a top-dressing of good loam mixed with bone-meal, at the rate of a seven-inch potful of bone-meal to every bushel of soil. Very long shoots should be shortened slightly, and the plants stood in the open, plunging them to the pot rim in a bed of coal ashes as a protection against frost. Many of the dwarf Polyantha Roses are excellent subjects for pot cultivation, and for this purpose they are best propagated from cuttings which root readily next month in a sheltered border, in the same way as Gooseberry cuttings; or, better still, insert four cuttings in a six-inch pot and plunge the receptacle in a trench about an inch below the soil; by this means fine plants suitable for forcing will be obtained next autumn.

Chrysanthemums.—As the buds develop continue to house the plants, as the more advanced buds are liable to suffer from damp, and after the end of the present month the plants are no longer safe from frost. The later flowering varieties are best kept out-of-doors for some time to come, but it is wise to arrange them together under a skeleton frame, fitted with blinds that may be drawn over them at night. Chrysanthemums should be housed in light, airy structures, and during dull days a little fire-heat may be necessary to dispel damp and

keep the atmosphere buoyant. After housing the plants, mildew often proves troublesome; the best preventive of this complaint is vaporising with Campbell's sulphur vaporiser. The occasional use of a suitable, approved fumigant may also be necessary to prevent an attack of aphids. Many other subjects, such as *Sparmannias*, *Salvias* and the general run of hard-wooded plants, should now be placed indoors. Before doing this the houses should be thoroughly cleansed, and the walls coated with fresh lime. After housing them, certain plants are apt to lose many of their leaves, due to the atmosphere of the houses being much drier than out-of-doors. This may be prevented by keeping the houses well damped for a time to promote plenty of atmospheric moisture. Many plants, including *Primulas*, *Cinerarias* and *Cyclamens*, growing in cold frames, may, with advantage, be removed to lighter and more airy structures.

Crocus.—All the large-flowered Crocuses are very beautiful for greenhouse or house decoration, and for this purpose are best grown in 48 sized pots, shallow pans or bowls, using fibre as a rooting medium when pans or bowls are selected. The corms will not respond to forcing but should be brought on gradually in frames or in a cool house. Any attempt to force these plants results in their going blind. Any subjects that will respond to cool treatment are worthy of consideration in these days of dear fuel.

China Asters that were sown late for cultivation in pots have developed their buds, and should be lifted and placed in pots and boxes, or planted out in cold frames according to the requirements of the establishment. These plants are equally useful for conservatory decoration or simply for supplying cut blooms.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Herbaceous Border.—Many species of hardy perennials which flower in early summer may be divided and transplanted at this date; this is necessary where the soil is exhausted or the plants too large for their positions. *Pyrethrums*, *Doronicums*, *Delphiniums* and *Paeonies* are amongst plants which need transplanting if the best results are expected next year. Respecting *Delphiniums*, unless new growth is observed and the work can be done now, defer the operation until the spring. Thoroughly trench the ground and enrich the soil sufficiently to carry the plants successfully over several years. The hybrid forms of *Paeony* are very fine, and answer admirably when planted beside grass paths. They are also adaptable for using boldly in landscape planting and brightening sombre nooks in large rock gardens. *Pyrethrums* that were cut down in June to provide a display of flowers in autumn may be divided in early spring. The method of pulling the plants to pieces, potting the portions in small pots and affording them the protection of a cold frame until established, is to be recommended at that season. At the time of dividing herbaceous species, very small outside pieces should be selected from the clumps and planted in the reserve garden; the centres of large specimens are useless for purposes of propagation and should be discarded.

Sweet Peas.—The autumn sowing of Sweet Peas out-of-doors is not generally successful in the North. Seeds may be sown in pots or turves and given the protection of a cold frame. After careful trials, I find that seedlings planted out in turves make quicker headway in this district than those planted from pots. Cut the turves in suitable lengths and widths and fit them closely together in boxes. Sow the seeds 12 inch apart in depressions made for the purpose, and cover them with good, fine loam. When the seedlings are growing freely, pinch out the points, and give abundance of air on all favourable occasions.

SCOTLAND.

FRUIT NOTES.

GOOSEBERRY Mildew is particularly bad in some localities of Scotland. I have seen the bushes quite black with it, and the great evil is that when diseased plants have been burned and others brought in to replace them, a recrudescence of the fungus takes place, probably because the new stock was also not clean. The disease appeared here three years ago, and last year, during summer, spraying with Gishurst Compound, two ounces to the gallon, kept it down, although this strength burned the foliage of some varieties. The bushes were closely pruned, or rather lightened of shoots in winter, and an eight-ounce solution of the same fungicide applied, which was followed by a two-ounce one in early summer. After all, the young growths were affected later, and these were all cut off and burned, and at present there is no appearance of mildew, and I am hoping that another 8 oz. spraying in the coming winter will rid our bushes of the complaint. It seems that it is by no means a new disease, and where it has been customary for the fruit to be attacked, berries washed before using them are said to be quite good for consumption, at least when cooked. It is probably, therefore, unnecessary to stop the sale of fruit from mildewed bushes if it has been properly cleaned on the fruit farm. I am told that wild Gooseberries are diseased to a large extent.

Two years ago I got permission to cut over some old, but beautifully trained, Pear-trees that were practically barren, and I am in the expectation that next year there will be a large crop on these trees, and probably for the next few years, when the crops will begin to fail.

The absence of bees at the blossoming period has exploded the very old theory that these insects were essential to the production of fruit, and also may have a bearing on the theory of cross fertilisation being of importance. Gardeners usually may be able to determine the prospects of the fruit crop on an examination of the flowers; when the pistils are perfect the prospects are good, when abortive, as they frequently are, bad. After all, light cropping seems to be the best means of ensuring uninterrupted fertility.

It may be that in old gardens, such as the one from which I write, that the Apple crop is now and again ensured through being provided with out-of-date varieties, the present fashion of limiting the number of kinds being, to some extent, a cause of shortage. Some grown here hardly ever fail to carry a crop, sometimes, as in the present year, a very large one. Of these East Lothian Pippin, Ganges, a late eating Apple but also a good cooker; Cock-pit, an enormous cropper but small, yet of delicious flavour when cooked, in that respect rivaling the Pear; Tom Putt, also a certain cropper, as also are Cornish Aromatic, Irish Peach, and Devonshire Quarrenden. Keswick Codlin produces excellent fruit here, and also Nelson Codlin, a late keeping variety. There are some sorts of Apples that crop only at intervals. Of these Cellini is carrying a very large crop this year. Cox's Pomona is also an intermittent bearer. Cox's Orange Pippin, which seldom produces much of a crop here, and then only small fruit, is this year better than ever I have seen it in these gardens. I must not omit to mention Northern Greening, which in one part of the garden never fails, and, kept till April and May, no fruit is more deliciously flavoured. King of the Pippins always bears, and is valuable alike for dessert and the kitchen.

We had an inordinately heavy rainfall in August—nearly six inches—which benefited everything cropping, but unless it was the excessive moisture for some time, I cannot explain why the foliage of several ligneous subjects has been very seriously the prey to fungus. Some *Crataegi* specimens are already denuded of foliage, others brown. Beeches are very badly affected, and in the garden certain varieties of Apples have suffered severely. R. P. Brotherston, Tynningham Gardens, Preston Kirk.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 148.)

DORSETSHIRE.—The fruit crops in this district are, on the whole, the worst ever known. Apples are very scarce, and of the few fruits that set a big proportion dropped from the trees. Cherries were a failure, though Morellos were about one-third of an average crop. Peaches and Nectarines are very poor, and the trees are in bad health. Certain varieties of Plums are good, but Greengages are a failure. Black Currants were poor. Strawberries were good, but rain spoiled the late sorts. W. E. Adford, St. Giles Gardens, Salisbury.

HAMPSHIRE.—Apple trees flowered well, but the flowers were deformed, owing doubtless to the heavy crop of last year and extremely mild winter. Varieties carrying fair crops are Worcester Pearmain, James Grieve, Duke of Devonshire, King Edward, Mère de Ménage, the Queen, and Bramley's Seedling. Pears bearing well are William's Bon Chrétien, Louise Bonne of Jersey, Doyenné du Comice, Marguerite Marillat, Charles Ernest, and Winter Nelis. Cherries were spoilt by heavy rains. Gooseberries and Raspberries cropped abundantly. Late Strawberries suffered considerably from rains, although early varieties were good. A. W. Blake, The Castle Gardens, Hightclere.

The Apple crop generally is a failure in this neighbourhood. The trees commenced growth much too early owing to the abnormal weather during February and March, thus hastening the development of the blossoms prematurely; this, coupled with the excessive strain upon the trees last year owing to heavy crops, are the causes of the failure. The growth of the trees is most satisfactory, being vigorous, with full-sized, healthy foliage, betokening a good promise for next year. Worcester Pearmain has a full crop on many trees. Other sorts with a sprinkling of fruit are Ben's Red, Blenheim Pippin, Warner's King, Lord Grosvenor, Grenadier, Mère de Ménage, and Bramley's Seedling. Plums are variable in the neighbourhood; there are full crops of Supreme, Czar, Rivers' Prolific, Jefferson Monarch, various Gages, and Belle de Louvaine. Bush trees of Pears Doyenné du Comice, Beurré Superfin, William's Bon Chrétien, and Josephine de Malines have fair crops. I never saw Nut trees so heavily laden before. Gooseberries and Currants were huge crops, and Strawberries fair. E. Molyneux, Swanmore Farm, Swanmore.

KENT.—After the encouraging amount of Apple and Pear bloom, it is most disappointing to record a very considerable under-average crop of these fruits in this district. Many growers attribute the shortage to frost and cold winds at the time of flowering. But with me, the greater part of the damage has been caused by what we term the "Cap Weevil"—quite a new pest to me here. This troublesome insect protects itself so securely that persistent washing with strong insecticides has been of no avail. I am wondering if any of your readers can suggest a sure remedy. Of a few dozen blooms marked (without the weevil) every Apple set and developed satisfactorily, which, to my mind, is sufficient proof that this shortage is not entirely due to frost and cold. A very curious fact is that where there is a fairly good crop of Apples, they are of the Codlin type. The few trees of Golden Spire not attacked by the weevil are simply laden, so much so that I must either support them or thin the fruit. Peaches set remarkably well, and the trees have made very clear growth, but amongst some varieties split stones are very numerous—a thing I have never known before out of doors. A tree of Duchess of Cornwall on a south wall, carrying several dozens of fruit, had quite half of them useless for dessert purposes. I know this trouble is generally attributed to faulty pollination, but we had quantities of bees among the bloom at the time the flowers were expanded. J. George Woodward, Barham Court, Teston, Maidstone. (To be continued.)

EDITORIAL NOTICE.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees etc., but they cannot be responsible for loss or injury.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Letters for Publication.—as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

THE NAMES OF CONIFERS.

TREES have many points of interest. Their distribution over the earth, their past history in geological time, their devices for spreading seed and for gaining the upper hand over fire and other enemies, their beauty, uses, and importance in the national economy, all these suggest thought and awaken sympathy. To some people, like the author of the book* under review, the name of a tree is the essential thing. There is something to be said for this view, and gardeners especially know the value of correct nomenclature and the trouble that results from confusion of names when they desire to obtain a particular plant.

The cultivation of Conifers in this country, whether for ornament or for producing timber, is on a gigantic scale; and the number of species that have been introduced is astounding. Their accurate discrimination is a matter undoubtedly of great importance. Botanic descriptions of the ordinary kind are seldom studied except by enthusiasts, consequently an unconventional attempt to interest the man in the street in the nomenclature of trees is welcome. Mr. Rogers's book is such an attempt. It is concerned with the names of Conifers, or rather was intended to be so, but could not be kept within bounds. Its innumerable disquisitions on irrelevant subjects, its constant repetitions, and its random "shots" at explanations, will annoy people with exact minds. It is difficult to describe the book, which will take its place on the shelf beside the *Pinaceae* of Senilis, who says in his preface, "I care but little for what theoretical botanists or literary pedants may maintain against me."

Conifers and their Characteristics consists of two parts. The first part, 262 pages in large print, conveys the author's views on how trees obtained their names and in what way they may be distinguished, besides the disquisitions alluded to above. The second part contains 43 pages of Identifying Tables, all in very small print, and the pages printed sideways—an uncomfortable arrangement. These tables are based on the keys, published by Prof. A. Henry in *Trees of Great Britain*; and it would have been better if they had been printed in larger type and arranged in the same way as in that work. The original author of these keys is gratified to see them used and appreciated; but, of course, is not responsible for any modifications introduced.

With the delightful inconsistency that throughout characterises this book on Conifers, the identifying tables contain stray bits of information about dates of discovery, introduction and habitat. This information is sometimes in-

correct, as on page 277, where *Abies magnifica* is said to be a "tree of the plains." On the contrary, it is a tree of high mountain slopes and ridges, occurring in the Sierras of California, between 5,000 and 9,000 feet altitude.

It is usually a cheap form of criticism to point out trifling inaccuracies in a book that has cost an author an immense amount of labour. In the case, however, of this book on Conifers, the errata indicate carelessness on the part of the publishers, who should employ an expert to read the proofs, if the author is inexperienced. These errata do not perhaps detract much from the merits of the text, but they are eye-sores and give it an unworkmanlike appearance. Of errors in botanical names, we may indicate a few out of many: *Picea Shrenckiana* is wrongly printed "Shrenkiana" on pp. 106, 103, 280 and 328. *Juniperus phoenicea* is wrongly given as "phoenicia" on pp. 190, 294, 325. "Hespero Pence," p. 325, should be printed as one word. *Retinispora* is more correct than *Retinospora* (p. 172). The worst of these errata is the ghastly "Pseudo-Tsuga" on pp. 279, 316, 322, 331, and *Pseudo-Tsuga* on pp. 97, 98. The correct name of the Douglas Fir is written as one word—*Pseudotsuga*. The Sitka Spruce appears as "Sitkensis" on p. 119; but elsewhere it seems to be correctly printed *Sitchensis*. "Kaemferi" on pp. 143, 286, 327 should read "Kaempferi."

With regard to the English name for the genus *Pseudotsuga*, it would be well to use the name Douglas Tree, instead of Douglas Fir or Douglas Spruce. The tree is neither a Silver Fir nor a Spruce, its resemblance to these genera being superficial. It is a distinct genus, its closest affinity being with the Larch. Such a question is not, as asserted on p. 98, a botanical puzzle involving "counting on points," but a matter requiring a knowledge of the morphology and of the history of the genus in geological time.

With regard to *Abies cilicia*, the form adopted on pp. 70, 92, 93, 278 and 321, this is probably an erratum, as the tree is called *Abies cilicica*, Carrière, in all the books. In this case, Mr. Rogers is probably right by a happy accident, as Carrière's publication took place in 1855, and is antedated by the prior name, *Abies cilicia*, Kotschy, ex Lindley, in *Gard. Chron.*, June 17, 1854, p. 387.

We cannot acquit Mr. Rogers of occasional misquotation and misunderstanding of the authorities, that he has read. On p. 176 he gives "Cedrus" as the Latin synonym of the Greek *Thuia*, whereas it was *Citrus*, thus being the name applied by the Romans to the Algerian *Tetraclinis quadrivalvis*, out of the burs of which were made marvellous tables, costing as much as 1,400,000 sesterces apiece, £12,250 in our money.

We now come to matters of fact, and not of names; and there is no harm in pointing out that some of the statements in the book are erroneous. For instance, *Pinus albicaulis* is not, as stated in p. 265, "a shrub of 10 to 20 feet high." It is a beautiful and large tree. The writer measured one, and it was not exceptional, on Mt. Nicholas in Montana, 84 feet in height and 9 ft. 2 ins. in girth. Like many alpine trees, it becomes stunted at high elevations, where it is much exposed to wind. The only specimen known to the writer in cultivation is one near the Pagoda in Kew Gardens; it looks healthy and is certainly a tree of some promise.

Etymology is apparently a subject not yet recognised by the public as a serious science,

requiring intelligence and industry to master its leading principles. Any fanciful guess seems good enough for the amateur; and this book is spiced with amateur etymology. To take an example: the Larch, p. 134, is said to derive its name from the Semitic *el erec*, for which there is not the slightest historical foundation. A hint is even given that it may be connected with the Latin *lar*, a tutelary deity. The word *larix* is indeed Latin, but is derived from an old Celtic root—*darik* (just as *lacrima* is a corruption of *dacrima*), cognate with modern Irish *dair*, and Gaelic *darach*, an Oak. The O. I. genitive *daracos* is equivalent, letter for letter, to the Latin genitive *laricis*. The Larch was well known to the Romans, who imported it regularly from the Rhaetian Alps, corresponding now roughly to the Grisons and Tyrol, the districts where to this day it is most plentiful. The inhabitants at that time were Celtic tribes, who applied the same name to the Larch in the mountains, as their relatives in the plain of Gaul gave to the Oak, these two trees supplying the most durable timber for building purposes. Enormous Larch trees were brought to Rome, the biggest log being recorded in the reign of Tiberius. It is said to have been 120 feet long, and 2 feet square throughout its length. The ancient Greeks were totally unacquainted with the Larch, as it grew in none of the countries known to them, and the Greek word *λαριξ* cited p. 134, is a late transliteration of the Latin name of the tree.

Mr. Rogers has, at Stanage Park, a fine example of *Larix pendula*, a remarkable hybrid between the European Larch and *Larix americana*, the history of which was given in these columns, LVIII, 178 and 234 (1915). He still harks back to the name, *L. dahurica*, which was erroneously given to the hybrid tree for some years. The statement on p. 138, that "between *L. europaea* and *L. dahurica* only minute differences exist" is incorrect. The true species, *L. dahurica*, a native of Eastern Asia, of which only young trees are known in cultivation, is remarkably different from the European Larch. The cones on *L. europaea* and *L. sibirica*, in spite of the remark on p. 147, are very distinct; and the habit of these two species is very dissimilar. *L. pendula* is very variable, as the trees now known, being all descendants of one original hybrid tree, constitute a series of forms between the two parents. As is often the case in hybridisation, remarkable sports have appeared among descendants in the second and third generation.

The romantic history of the famous grove of Cedars on Lebanon does not come out in pages 149-150, where a good deal of "chaff" is flung at the daughters of Judah and Ephraim. The preservation of this grove* is unquestionably due to its sacred character; but the story is too long to tell here. I may hint at its significance by mentioning that the valley of the Kadisha (i.e. holy) River, which takes its source in the grove, was one of the seats of the worship of Tammuz, the Syrian god, who was identical with the Phœnician Adon and the Greek Adonis. The Pyrrhic dance performed annually by the Maronites on the eve of one of the Christian festivals, is a survival of the ancient rites. It is strange that still, as Shelley sings:

"The soul of Adonais, like a star,
Beacons from the abode, where the Eternal
are." A. H.

(To be concluded.)

* A recent account of the Cedars of Mount Lebanon, with a plan of the grove and a discussion on the age of the trees, by Prof. A. Henry, appeared in *Country Life*, December 11th, 1915, pp., 810-813.

* *Conifers and Their Characteristics*. By Charles Colman Rogers. (John Murray, London.) 21s. net.

HARDY FLOWER BORDER.

SOME AUTUMN FLOWERS.

RECENT improvements amongst hardy flowers have enriched the flower garden to the extent that it may now be made to appear as gay in autumn as at any time. Amongst *Montbretias* the greatest change is noticeable. Most of us can recall the time when the chief representatives of this genus were *M. Pottsii* and others very similar. In their day they served their purpose, but in few instances were they taken seriously, since they were lacking in the qualities necessary to make them conspicuous in the mixed border or elsewhere. The persistent efforts of a few raisers have, however, been rewarded with a number of varieties which, in the necessary planning to prolong the season of outdoor flowers, cannot well be overlooked. The fault of the older kinds, apart from the flowers being small, was that most of their beauty was hidden because of their tubular or trumpet shape. This has disappeared entirely in the newer varieties, the flowers of which open out. Further improvements are noticeable in the strong, branching spikes which may attain a height of four feet, while the individual flowers measure as much as four inches across. Little imagination is thus needed to picture the effect produced when these are grown in beds or groups on the lawn, or in the mixed border. Liberal treatment is necessary, and the corms should be lifted before severe weather sets in and stored for the winter. Although it is evident the limit to improvement has not yet been reached, the following varieties are representative of the best: *Germania* was one of the first to herald the coming of the new race. The spike is strong and branching, and attains a height of between three and four feet. The colour of the widely expanding flowers is a glowing orange, with a full red throat, and the blooms are some three inches across. *George Davidson* and *Hereward* are much alike in habit and colour, though there is a difference of a few weeks in the time of flowering, the first named being the earliest; the colour of its flowers is orange yellow. *Prometheus* is notable for the circle of crimson around the eye of a deep orange flower four inches across. *Star of the East* is one of the very few *Montbretias* to gain a first-class certificate. It is a splendid grower, with spikes over four feet high, and widely expanded (over four inches across) blooms of a lovely orange yellow. These, with several others, are now plentiful enough to make extensive planting possible at a moderate outlay. Later varieties, such as *Queen Mary*, *Queen of Spain*, *Citronella*, and *His Majesty*, the last having been also awarded the R.H.S. first-class certificate will prove useful, although a distinct break from the yellow and orange shades which now prevail would be acceptable.

No less responsible for much that is desirable in the autumn are the *Michaelmas Daisies*.

While perennial *Asters* are plentifully seen in herbaceous borders, their adaptability for naturalising and for bare spaces in a newly planted shrubbery should not be overlooked. Of outstanding merit in the *Amellus* section are *Beauty of Ronsdorf*, *Perry's Favourite*, and *Framfieldii*, with an average height of 2½ feet; *Brilliant*, *W. Bowman*, and *Mrs. J. F. Raynor* are good in the *Novae-Angliae* section, and attain about four feet in height. The *Novi-Belgii* varieties include some of the finest sorts: *Triumph*, *Perry's Pink*, *Damocel*, *Climax*, *Autumn Glory*, and *Beauty of Colwall* being most useful.

To estimate the value of early flowering *Chrysanthemums* in the flower garden is not easy. Massed in beds or on rising ground they furnish a wealth of colour almost impossible to equal in autumn. The *Masse* family is still in the front rank of those requiring a minimum of attention, together with such free bloomers as *Champ d'Or*, *Normandie*, and *Roi des Jaunes*. Varieties which need dis-budding, such as *Sanctity*, *Harry Thorpe*, *Cranfordia*, and *Countess*, are no less worthy of extensive planting for effect.

The Japanese *Anemones* stand alone for refinement among all autumn flowers, and since they prefer a damp, shady place, they may be

freely planted where others would fail. The white varieties are never seen to better advantage than when massed against a background of evergreens and for grouping by the waterside not many plants are more suitable, for they resent too much root disturbance, and a heavy soil does not affect their well doing. There are many varieties, but *Whirlwind* and *Honorine Joubert* are splendid whites, and *Queen Charlotte* and *Lady Ardilaun*, good pink sorts.

The autumn *Sunflowers* are indispensable for the manner in which they light up the garden from August till mid-October; the varieties *Miss Mellish* and *semi-plenus* are remarkably free.

Many more subjects are almost as useful, but it is from amongst those mentioned, and including *Dahlias*, *Gladioli*, and annual *Asters* that the most satisfaction is derived during autumn. *Yorkshire Gardener*.

clement weather. Where it may rest snugly away from rain at that season it is not difficult to manage, and the best plants the writer ever saw were in the rock garden of an amateur of ample leisure, who devoted the bulk of his time to the cultivation of his flowers, which he undertook with remarkable success. His plants of *Cyananthus lobatus* were protected by a sheet of glass in winter. They were grown in the compost suggested above, and were in a position facing south-west. In dry weather the *Cyananthus* was treated to an occasional soaking with pure water, but not poured on the plant itself. The writer has always found a somewhat similar treatment best for the *Cyananthus* in a district with an average rainfall of about 30 inches per annum. In a drier part the moraine with water below is certainly preferable, unless the grower keeps the plant's from



FIG. 67.—*GENTIANA FARRERI*: FLOWERS OPAL BLUE.
(R.H.S. First Class Certificate, Sept. 7, 1920.)

THE ALPINE GARDEN.

CYANANTHUS LOBATUS.

We have few more lovely flowers in the rock garden in autumn than this native of the Himalayan region. It is one of the plants which to see is to covet, and when in good condition is perfectly exquisite. The trailing branches are set with small leaves, charmingly lobed at the top and clothed with white hairs. At the extremity of the branch there is produced a wonderfully beautiful flower of a lovely blue colour, and resembling in form that of the *Vincas*, or *Periwinkles*, but with an inflated calyx. Bare verbal descriptions cannot convey the beauty of this plant, and the writer has never seen a coloured illustration which adequately delineates its charms owing to the colour mediums failing to portray the subtle points of beauty the flowers, foliage, and stems present. It is from the point of view of the enthusiast an ideal alpine. Unfortunately, however, it has its limitations in our climate, and not only the seed capsules, but the plant itself, is liable to decay in wet seasons. It likes moisture, yet resents it in winter, and does not appreciate much of it overhead at certain seasons. A good moraine with water underneath will suit it well—provided that the water below is shut off in winter—in a dryish district; in a wet district it succeeds in a compost of loam, peat, sand, and grit in about equal parts, and needs protection from the rains and in-

suffering from drought in summer. *Cyananthus lobatus* is the best of a number of plants belonging to the same genus, and it is not likely to be superseded by any of those more recently introduced. It is propagated by seeds or cuttings. *S. Arnott*.

GENTIANA FARRERI.

MR. REGINALD FARRER, who discovered this beautiful *Gentian* in the high alpine sward of the Da-Tung chain (Northern Kansu-Tibet), states that "it is by far the most astoundingly beautiful of its race, reducing *G. verna* and *G. Gentianella* to the dimmest acolytes." Mr. Farrer describes the colour as "an indescribably fierce luminous Cambridge blue within (with a clear, white throat), while, without, long van-dykes of periwinkle-purple alternate with swelling panels of nankeen, outlined in violet, and with a violet median line." The plant exhibited by Mr. W. Wells at the meeting of the R.H.S. on September 7 was a fine, healthy specimen in a pan (see Fig. 67). In cool, rich soil in its natural habitat it forms patches a yard across. The robustness of the plant, together with its dwarf habit and great freedom of flowering, makes it a desirable subject for the rock-garden, and it will also be valuable, like some of the other *Gentians*, as an edging plant.

SHOT-HOLE DISEASE OF ANTIRRHINUM MAJUS.

This "shot-hole" disease of *Antirrhinum majus* is caused by a species of *Cercospora*, and is very similar in appearance to the well known "shot-hole" disease of Peach and Nectarine, due to *Cercospora circumcissa*.

A disease of *Antirrhinum*, popularly known as Anthracnose, has been described and figured by

badly affected plants, the spots frequently coalesce, and the leaves become somewhat distorted. Fig. 69. The spots are not confined to any definite area on the leaves.

The fungus does not appear to gain access through the stomata, but can directly penetrate the epidermis of the plant. The mycelium, which is strictly localised to the spot and the discoloured area round the spot, is both inter- and intracellular. Hyphae can be seen growing down in between, Fig. 72d, and through

mycelium, and the phloem, cambium, and medullary rays are also affected.

Sori of twisted hyphae form in the epidermal cells or in between the cuticle and the epidermis on both stem and leaves. These sori burst through the cuticle and the spores are given off from tufts of simple conidiophores on the surface of the sorus, Figs. 70, 72. These tufts of spores are mostly on the upper surface of the leaves, but may also occur on the under surface. The spores are hyaline, curved, 2-3 celled, drawn out into a point at the apex and somewhat thickened at the base, $30-35 \mu \times 3 \mu$ Fig. 71. Spores are only developed on the dead tissue in the sunken area of the spot. They are produced in large numbers in wet weather. In dry weather the centres of the spots soon shrivel and fall away, and spore formation is reduced.

When grown in beds for ornamental purposes the plants should be sprayed every two or three days with liver of sulphur, 1 oz. to 3 gallons of water, if applied in cool, damp weather, but the solution should be diluted to 1 oz. in 6 or 7 gallons of water in bright, hot weather. Enough soft soap to make a good lather should be added to secure a thorough wetting of the plant, especially the upper surface of the leaves. This fungicide does not leave disfiguring deposits on the leaves when dry.

Dusting the plants and the surface of the soil from time to time with flowers of sulphur is to be recommended. If good varieties are propagated by cuttings, all spotted leaves should be removed from the shoots to be used, and all cuttings with spots on the stems rejected. The cuttings should then be dipped in liver of sulphur solution and thoroughly wetted, care being taken that the cut rooting surface of the stem does not come in contact with the solution. The pots or boxes of cuttings should be dusted from time to time with flowers of sulphur, and all spotted leaves removed as they appear. When plants are grown for seed purposes, Bordeaux Mixture should be used, as it is a more lasting and effective fungicide. In the open, however, Bordeaux Mixture must on no account be used in wet or dull weather when the atmosphere is laden with moisture, owing to the risk of scorching the leaves.

F. C. Stewart in his *Bulletin* suggests that in the case of *Antirrhinum* subject to anthracnose and grown indoors, there should be good ventilation, that the leaves should be kept as dry as possible and the plants sprayed once a week with Bordeaux. The same treatment is to be recommended for plants under glass attacked by *Cercospora* "shot hole."



FIG. 63.—SHOT HOLE DISEASE OF ANTIRRHINUM.

1. Healthy green-leaved variety. 2. Diseased yellow-leaved variety. 3. Badly-diseased yellow-leaved variety. 4. Shoot of green-leaved variety killed by *Cercospora*. One-third natural size.

F. C. Stewart (*Bull* 179, *New York Agri. Exp. St. Genev., U.S.A.*), on cultivated *Antirrhinum* in America in 1950, and due to the fungus *Colletotrichum Antirrhini*, which causes elliptical or circular sunken spots on the skin and leaves of the plant. A short abstract of this Bulletin is published in the *Journal Roy. Hort. Soc.*, Vol. xxvi., 1901-2, page 194. The *Cercospora* "shot-hole" of *Antirrhinum* is probably well known to all growers of *Antirrhinum*, but, so far as is known, no record of the investigation of this fungus has been published. Owing to the fact that both fungi cause spotting of the skin and leaves of the plant, these two diseases have probably been attributed to one and the same organism. This season, the *Cercospora* disease first made its appearance in the beginning of July, on a plot of *Antirrhinum* grown for experimental purposes at this Institution, and spread very rapidly during the recent spell of wet weather. The first symptoms are minute buff-coloured spots on the lower leaves of the plant. These spots increase in size rapidly, are more or less circular in shape, pale brown or buff in the centre, with a well-defined margin, and surrounded by a ring of discoloured plant tissue. On green-leaved varieties this ring is a deep purplish brown, but on the yellow-leaved varieties the discolouration is less marked. The central portion of the spot is sunken, to a greater extent on the under than on the upper surface of the leaf, owing to the greater shrinkage of the disorganised mesophyll cells. In dry weather this central area dries out and falls away, giving the typical "shot-hole" appearance to the leaf. The disease spreads from below upwards, and not only attacks the leaves calyx and seed-pod, but also the stems of the younger shoots. The young stems are girdled and die back rapidly, the plant eventually dying (see Fig. 68). In

Fig. 72c, the cells of the palisade tissue and the mesophyll. The phloem and cam



FIG. 69.—SHOT HOLE DISEASE OF ANTIRRHINUM.

1-2. Healthy leaves. 3-11. Diseased leaves. Two-thirds natural size.

bium of the vascular bundles are disorganised, but very little mycelium is to be found in the vessels, hence the shrivelling of the shoots is not due to the blocking of the vessels. In the stem, the cortical tissues are permeated with

All dead and dying plants should be removed and burnt immediately, and *Antirrhinum* should not be grown a second year on infected land. D. M. Cayley, John Innes. Hort. Institution, Merton.

INTENSIVE CULTIVATION.*

(Continued from p. 146.)

For example, it is known that the trade of raisers of seed Potatoes for export to Jersey or Spain is in some places menaced by the presence of a plot of land a mile or two away in which wart disease has appeared. It may be that the

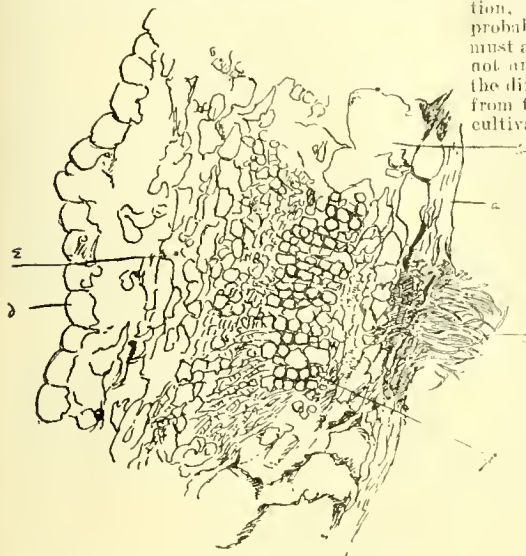


FIG. 70.—SHOT HOLE DISEASE OF ANTIRRHINUM : SECTION THROUGH A SPOT ON THE LEAF.

a. Epidermis (upper). b. Disorganised dead palisade cell. c. Tuft of spores which have burst through the epidermis. d. Epidermis (lower). e. Disorganised dead mesophyll. f. Vessels of a vascular bundle. $\times 115$.

outbreak occurred on only a single plant, yet nevertheless the seed-potato grower may be inhibited from exporting the seed grown by him on clean land. The prohibition is just, but the man who refuses to issue a licence to export, if he be a trained horticulturist in touch with research, will know that there is research work to hand, and that immediately, and will bring the problem to the urgent notice of the researchers. Thus the scientifically trained administrator becomes, although not himself witty in research, the cause of wit in others. To ask the researcher, who must inevitably be to some extent like Prospero "wrapt in secret studies and to the State grown stranger," to discover problems which arise out of the administrative embarrassments is unreasonable; on the other hand, the scientifically trained administrator acts naturally as liaison officer between the laboratory and the land, passing on the problems which arise out of administrative necessities or expedients.

In this connection it is interesting to recall the fact that the importance of the existence of varieties of Potatoes immune from wart disease was observed years ago by an officer of the Ministry. Mr. Gough, who is also a man possessed of a scientific training, and I believe also that I am right in saying that either this officer or another suggested long ago that the clue to the spread of wart disease in England was to be sought in the Potato fields of Scotland.

The tacit assumption which has so far underlain my address is that an extension of intensive cultivation in this country is desirable. I have indicated that areas are to be discovered where soil and climate are favourable to this form of husbandry, and that by the establishment of a proper form of research—administrative—and educational organisation the already high standard reached by intensive cultivators may be surpassed. It remains to inquire whether any large increase in the area under intensive cultivation is in fact either desirable or probable.

The dispassionate inquirer will find his task by no means easy. He should, as a preliminary, endeavour to discern in the present welter of cosmic disturbance what are likely to be the economic conditions of the politician's promised land—the new world which was to be created from the travail of war. In the first place, and no matter how academic he may be, he cannot fail to recognise the fact that costs of production, including labour, are at least twice and probably 2½ times those of pre-war days, and he must assume that the increase is permanent and not unlikely to augment. What this means to the different forms of cultivation may be judged from the following estimates of capital costs of cultivation of different kinds:—

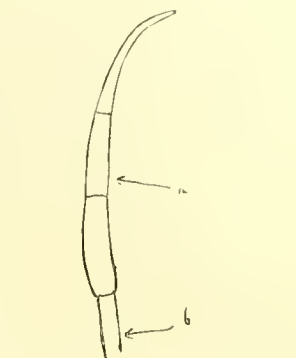


FIG. 71.—A. SPORE. B. SIMPLE CONIDIOPHORE. $\times 1,400$.

Labour and Capital for Farming and Intensive Cultivation.

	Labour per 100 Acres.	Capital per Acre.	
		Pre-War.	Present.
Mixed Farming ...	Men. 3-5	£ 10	£ 20-25
Fruit and Vegetable growing ...	20-30	50	100-125
Intensive Cultivation in the open (French Gardening) ...	200	750	1,500-1,875
Cultivation under glass ...	200-300	2,000	4,000-5,000

In the second place the inquirer is bound to assume that the intensive cultivator of the future, like his predecessor in the past, will have to be prepared to face the competition of the world. He may, I believe, look for no artificial restriction of imports, and therefore he must be prepared to find that higher costs of production will not necessarily be accompanied by increased receipts for intensively cultivated commodities.

But, on the other hand, he may find some comfort in the fact that both immediately before and, still more, subsequently to the war, the standard of living both in this country and throughout the world was, and is still, rising. Hence he may perhaps expect a less severe competition from foreign growers and also a better market at home.

He may also derive comfort from the reflection that the increased cost of production which he must bear must also, perhaps in no less measure, be borne by his foreign competitors. Even before the war the cost of production of one of the chief horticultural crops—Apples—was no higher in this country than in that of our main competitors. There are also certain other apparently minor but really important reasons for optimism with regard to the prospects of intensive cultivation. Among these is the increasing use of road in lieu of rail transport for the marketing of horticultural produce. The advantages of motor over rail transport for the carriage of perishable produce for relatively short distances—say up to seventy-five miles from market—lie in its greater punctuality, economy of handling, and elasticity. Only a poet native of a land of orchards could have written the lines: 'When I consider

everything that grows holds in perfection but a single moment.' Fruit crops ripen rapidly and more or less simultaneously throughout a given district. They must be put on the market forthwith or are useless. A train service, no matter how well organised, does not seem able to cope with gluts, and hence it arises that a season of abundance in the country rarely means a like plenty to the consumer. I am aware that the problem of gluts is by no means simple and that the railways are sometimes blamed unjustly for failing to cope with them, but nevertheless I believe that, as Kent has discovered, the motor-lorry will be more and more called in to redress the balance between the home growers and the foreign producers in favour of the former; or by its use the goods can be delivered with certainty in time to catch the market and thus give the home producer the advantage due to propinquity which should be his. Increasing knowledge of food values, together with the general rise in the standard of living, also present features of good augury to the intensive cultivator. Jam and Tomatos and primeurs may be taken as test-cases.

In 1914 the consumption of jam in the United Kingdom amounted to about a spoonful a day per person. The more exact figures are 2 oz. per week or 126,000 tons per annum.

It is difficult to estimate the area under jam fruit—Plums, Strawberry, Raspberry, Currants, etc.—required to produce this tonnage, but it may be put at between 10,000 and 20,000 acres.

By 1918, thanks to the wisdom of the Army authorities in insisting on a large ration of jam for the troops, and thanks also to the scarcity and quality of margarine, the consumption of

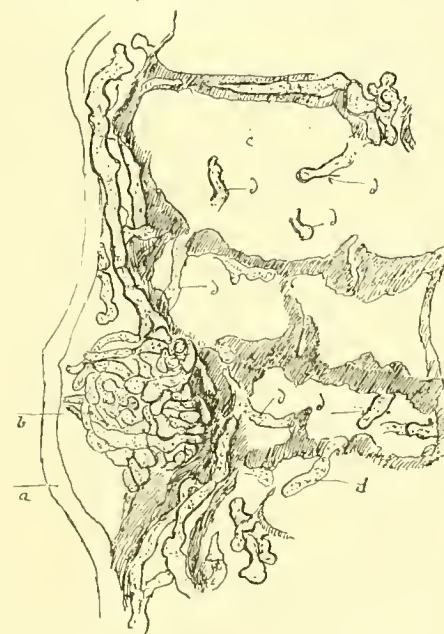


FIG. 72.—SHOT HOLE DISEASE OF ANTIRRHINUM : SORUS OF TWISTED HYPHAE BENEATH THE CUTICLE OF THE LEAF (UPPER SURFACE).

a. Cuticle. b. Sorus of twisted hyphae. c. Intracellular mycelium. d. Intercellular mycelium. (c and d. in the palisade tissue). $\times 400$.

jam had more than doubled. From 126,000 tons of 1914 it reached 340,000 tons in 1918. To supply this ration would require the produce of from 25,000 to 50,000 acres of orchard, which in turn would directly employ the labour of say from 5,000 to 10,000 men. Yet even the tonnage consumed in 1918 only allows a meagre ration of a little more than a couple of spoonfuls a day. It may therefore be anticipated that if, as is probable, albeit only because of the immensity of margarine, the new-found public taste for jam endures, fruit-growers in this country will find a considerable and profitable extension in supplying this demand.

(To be continued.)

* Presidential address by Professor Frederick Kerley, C.B.E., Sc.D., F.R.S., to the Agricultural Section, British Association for the Advancement of Science, Cardiff, 1920.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

No Apple Pips!—Is it a matter of general observation that this season Apples have no pips? Here, even in the best examples, it is rare to find more than one perfect seed, and the great majority of fruits have none at all. It seems rather an interesting case of partial fertilisation. *Chas. E. Pearson, F.R.S., Hill Crest, Lowdham, Notts.*

A Warning to Gardeners (see p. 124).—A similar mishap to the one recorded by Mr. Jones occurred here three weeks ago. I, with an assistant, was picking Plums about 16 to 18 feet from the ground, from a standard tree, when suddenly the topmost branch broke in halves. As both of us were up the tree, the result may be imagined, but neither of us met with any injury. When safe on *terra firma*, good advice came across my mind, which is found in the book of books: Let him who thinketh he standeth take heed lest he fall. *Thomas W. Mead, Marshalls Park Gardens, Romford, Essex.*

Late Strawberries (see pp. 77 and 99).—I have read with interest the correspondence on the best late Strawberry, but I have not seen any mention made of Royal Sovereign as a late variety. I consider it one of the best, if not the very best, Strawberry for late cropping. To-day (September 4) I have just picked a large dish of fine berries, quite as large, as good in colour, and I consider, if anything, better flavoured than those we had in June. There is another good point about this sort at this time of the year—the fruit is much firmer and not so watery as it is earlier in the season. I have been picking dessert fruits for the last 10 days, and my employer declares it is the best flavoured Strawberry he has tasted. I should be interested to know if anyone else has tried, and succeeded, with Royal Sovereign as a late Strawberry. *W. R. Lisle, Lock House Gardens, Partridge Green, Sussex.*

Clerodendron ugandense and Impatiens Oliveri.—The notes on these two plants by Mr. E. Brown (p. 136) are interesting. The *Clerodendron* was raised from seeds sent to Kew in 1906 by Mr. M. T. Dawe, who collected them in "Voi, Uganda, at 2,000 feet above sea-level." Mr. Brown says they were collected at Ooi, in British East Africa, and if he is right, then the *Botanical Magazine*, in which the plant is figured and described (t. 8, 235), is wrong. The exact geographical position is, however, of less interest horticulturally than Mr. Brown's statement that he found this species at an elevation of 7,600 feet, and that he never saw it as a climber, except at Kew. Here, at first, it formed a shrub about a yard high with slender, leafy branches, terminated by elegant racemes of blue flowers a really charming plant. It has since become scandent, as other *Clerodendrons* are under cultivation. The important fact is that this blue-flowered species is a most attractive winter flowering greenhouse plant. *Impatiens Oliveri* was introduced to Kew in 1903 by means of seeds presented by Sir John Kirk, who was for many years Political Representative in Zanzibar. He called it "Impatiens species, stems erect, fleshy, 4 feet high, bushy, flowers white," and stated that the seeds were gathered on the Uganda railway at Naivasha, 390 miles inland, at an elevation of 6,800 feet, in volcanic rock or tufa. Naivasha is about fifty miles south of the equator, and in the region of Mount Kenia. The plant is nearly hardy, at any rate it grows and flowers well in the open air during summer at Kew, and it is a really good greenhouse shrub, always a picture of health, and always in flower. We also owe to Sir John Kirk the introduction of *I. Sultanii*, seeds of which came to Kew in 1891. *W. W.*

[A plant of *Impatiens Oliveri* flowering in the greenhouse at Kew formed the subject of the supplementary illustration in *Gard. Chron.* October 27, 1906.—Eds.]

SOCIETIES.

NATIONAL CHRYSANTHEMUM.

THIS Society commenced its activities for the season 1920-21 by holding a meeting of its Floral Committee at Essex Hall, Strand, on Monday, September 20, at 3 p.m. Mr. D. B. Crane was re-elected chairman of this Committee, and when acknowledging his appointment he referred in feeling terms to the loss the Society had sustained by the death of Mr. Thos. Bevan. A dozen novelties were placed before the Committee, from two exhibitors, and the following awards were made:—

FIRST-CLASS CERTIFICATE.

Silver Lining.—A graceful medium-sized, early-flowering variety of silvery-pink colouring on a white ground. The flowers are very graceful and dainty, and carried on good stems. Shown by Mr. ALEX. W. THORPE, Lichfield.

Lichfield Purple.—This handsome, early-flowering, crimson-purple Japanese variety was shown in 1919, and the Committee expressed a desire to see it again. The colour is deep and pleasing, the flowers of medium size (II., i. b.), and borne on long, stiff stems. Shown by Mr. ALEX. W. THORPE.

Nantwich Aristocrat.—A handsome, early-flowering, Japanese variety, of good size and substance. The blooms are of good form, borne on tall stems and of a bright, rich chestnut colour, tipped with gold. Shown by Mr. J. HARDING, Poole Hall Cottage, Reasheath, Nantwich.

AWARD FOR COLOUR.

Red Cross.—A brilliant early-flowering, broad-petalled Japanese variety (II., i. b.). The colour is vivid chestnut crimson, with a glowing sheen. Shown by Mr. J. HARDING.

COMMENDATION

Perpetual White.—A pretty, free-flowering early variety, which, according to the raiser, has been blooming since May. The florets are clear, creamy white. The height of the variety is 2 ft. Shown by Mr. ALEX. W. THORPE.

Basra.—A showy, early and large-flowering pompon variety, 2 ft. high. The flowers are charming in form, freely produced, and of a rich, orange-bronze colour. A useful border plant. Shown by Mr. ALEX. W. THORPE.

EXECUTIVE COMMITTEE.

The Executive Committee met at the offices of the British Florists' Federation in the evening of September 20. Mr. E. F. Hawes presided, and after sympathetic reference had been made to the death of Mr. Thos. Bevan, for so many years chairman, Mr. Hawes, was elected to the vacant position. Arrangements were made for the November show, including a formal opening ceremony, which it is hoped His Excellency Count Hvaschi, the Japanese Ambassador, will conduct. Arrangements were also made provisionally for a representation at the Antwerp Show in October, and for lectures to be given at the close of the ordinary business meetings of the Executive Committee. Several new members were elected.

EARLY-FLOWERING CHRYSANTHEMUMS.

The Committee of the N.C.S. provided four classes and arranged with the R.H.S. to make a small exhibition of early-flowering Chrysanthemums on September 21. There were five entries, beside three non-competitive displays, the whole contribution making a fine demonstration of the value and beauty of these flowers.

Mr. J. C. KENWARD, High Street, Lewes, won first prize for six vases of disbudded flowers, with grand bunches of splendid blooms of Knarshoro Yellow, Sanctity, Red Ammirante, Normandie, Fl-enham White, and Le Paetole. Second prize fell to Messrs. FROOME AND SON, High Road, Finchley, for a capital display of Ammirante, Red Ammirante, Knarshoro Yellow, Sanctity, Elsenham White, and a fine pink sort; Mr. J. EMERSON, Walthamstow, third. The last named competitor was the only exhibitor in the class for a dozen bunches of undisbudded blooms and he made an excellent first prize

display, showing fine bunches of Crimson Masse, Ralph Curtis, Horace Martin, Polly, Crimson Polly, Roi des Blancs, and Marie Masse.

Mr. W. B. CRANE, Archway Road, Highgate, was the only exhibitor of six bunches of undisbudded flowers and he was awarded first prize for a set which contained Horace Martin, Dick Barnes and J. Bannister, in good condition.

Messrs. W. WELLS AND CO., Merstham, were awarded a Gold Medal for a wonderful group of early-flowering Chrysanthemums which filled a 50-ft. length of tabling. The display was elegantly disposed, and the numerous varieties were displayed in large stands in a most effective manner. Goacher's Crimson, La Garrone, Eden Leslie, Dorothy Ashley, Mrs. J. Fielding, Sanctity, Verona, Provence, Golden Diana, Framfield, Early White and Perle Chatillonaise, were a few prominent sorts in a collection of about 50 varieties.

Mr. KEITH LUXFORD, Sheering Nursery, Harlow, was awarded a Silver-Gilt Medal for a bright group of early-flowering Chrysanthemums. The flowers were in fine condition and admirably set up, notable sorts being Polly Cranford Pink, Goldfinch, Mary Mason, Mrs. J. Mason, Fee Parisienne, Harry Thorpe, and Lichfield Purple.

Mr. NORMAN KERR, Framfield, Sussex, was awarded a Silver Medal for a smaller but interesting display in which the bold Japanese variety Majestic was finely shown, as well as the early Roi des Blancs Improved, which appears to be a distinct advance upon an old and well-tried sort. Golden Polly, Normandie, Lizzie McNeil, and Perle Rose were also well shown by Mr. Davis.

TWICKENHAM HORTICULTURAL.

THE Annual Show of this Society was held on the 15th inst. at the Town Hall, and proved the most successful held in recent years. The vegetable classes were well filled in both the open and the Cottagers' sections; with the exception of Carrots, for which there were only five entries.

For nine kinds of vegetables there were five entries, and for six kinds, six entries. Fruit was also well shown, no fewer than seven cups being offered for competition. The Victory Challenge Cup (presented by Lady Ratan Tala) was won by C. S. Crawshaw, Esq., Bushey Nook, Teddington (gardener Mr. J. Linegar), with nine kinds of vegetables, and Mr. Anderson's Challenge Cup, for six kinds, was won by Mr. A. Coombes, 20, Bexley Street, Windsor. For a collection of four dishes of fruit, H.M. King Manoel, Fulwell Park (gardener Mr. G. H. Head) was first prize winner. Mr. J. Hurrell, Sussex Grove, Putney Park Avenue, was successful with four dishes of Apples; while for Black and White Grapes, three bunches of each, Mr. J. Taylor, Poulett Lodge, won first prize. Mr. H. A. Primrose, The Gardens, Devonshire House, was successful with Peaches, and was the principal exhibitor in the plant classes.

The winning dishes of Potatoes in the open class, shown by Mr. A. Hatt, 22, Silverhall Place, Isleworth, were nearly perfect; as were those shown by W. Greenslade, in the Cottagers' class. Mr. H. Fordham, Nurseryman, Twickenham, exhibited plants; Messrs. H. Spooner and Sons, Hounslow, Roses; and Lady Michelham, Waldegrave House (gardener Mr. J. Wheeldon), a fine exhibit of early-flowering Chrysanthemums.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE monthly meeting of this Society was held in the R.H.S. Hall on Monday, September 13th. Mr. Chas. H. Curtis in the chair. Two members were elected. The sick pay on the ordinary side amounted to £35 18s., and in the State Section to £34 15s., while Maternity claims came to £20. The sum of £22 18s. 6d. was passed for payment to the nominee of one member. The Trustees were requested to invest £600 in Corporation Stock.

ROYAL HORTICULTURAL.

SEPTEMBER 21.—Notwithstanding the inclement weather, there was a capital show at Vincent Square on this date. The vegetable show occupied a large amount of space, and the National Chrysanthemum Society filled one end of the hall, but in addition there were large displays of flowers and several novelties, including the giant Nerine Hera, several Asters, and the hybrid Buddleia Golden Glow from Mr. Van de Weyer, of Cork Castle. Further, there were Dahlias in abundance, including numbers of novelties selected for trial at Wisley.

Floral Committee.

Present: Messrs. H. B. May (in the chair), Geo. Harrow, S. Morris, E. A. Bowles, G. Reuthe, John Heal, W. Howe, H. Cowley, C. Dixon, Arthur Turner, Chas. E. Pearson, E. F. Hazelton, W. P. Thomson, George Paul, W. G. Baker, Clarence Elliott, Reginald Cory, Wm. Cuthbertson, H. J. Jones, Andrew Ireland, J. Jennings, R. C. Notcutt, W. H. Morter, J. F. McLeod, Jas. Hudson and C. R. Fielder.

AWARDS.

FIRST-CLASS CERTIFICATE.

Nerine Hera.—The finest Nerine yet seen. The large, carmine-pink flowers have the ends of the segments recurved. The umbels shown carried about twelve flowers each, and each head was borne on a stout stem, nearly a yard high, while the foliage is so broad as to suggest an Agapanthus. This wonderful plant was raised by Mr. Rose in 1908, and is the result of crossing a hybrid of *N. curvifolia* with *N. Bowdenii*. It first flowered in 1912 and has bloomed regularly each succeeding year. Five spikes were shown, but there were six spikes on the specimen which Mr. Rose has grown in a 10-inch pot. Shown by JAS. ROSE, Esq., 1, Rawlinson Road, Oxford.

AWARDS OF MERIT.

Cotoneaster Henryi.—This horizontally branching Cotoneaster bears an abundance of coral red berries in autumn, and is at all times an attractive plant. The lanceolate leaves are shining green, deeply veined and white on the underside. Shown by SYDNEY MORRIS, Esq., Earlham Hall, Norwich.

Aster Maggie Perry.—A large-flowered semi-double variety, wonderfully free flowering end of a light bluish mauve colour. The florets are numerous and spread somewhat so as to make up a large flower-head. A very effective garden plant. Shown by Mr. AMOS PERRY.

Aster Perry's White.—A pure white Michaelmas Daisy, with large circular blooms of excellent form. Shown by Mr. AMOS PERRY.

Helianthus Monarch.—A particularly handsome form, with large golden, dark-centred flowers borne on tall, stiff, purplish stems. Each flower has three or four rows of ray florets, consequently they have a fairly substantial appearance without being in the least degree heavy. It is one of the finest of the rigidus forms. Shown by Mr. MAURICE PRICHARD.

Aster Rachel Ballard.—Another addition to the double-flowered varieties. It has rosy mauve flowers, and these are very freely produced on plants 3½ ft. high. Shown by Messrs. BAKERS.

Chrysanthemum Hollicott Beauty.—A medium-sized, elegant Japanese variety of fine form and substance. The flowers are borne on dark stems above dark foliage, and their colour is bright orange bronze. This should make a first-rate market variety. Shown by Mr. W. ROOTS, Hollicott, Cranford.

Nerine Mascotte.—This handsome variety has fine flowers measuring 3 inches across, and the spike shown carried nine blooms. The variety is of the Fothergillii type, with smooth segments which recurve at the tips, and the colour of the flower is brilliant cherry-red with a central band of scarlet, the whole glistening in a most effective manner. Shown by Messrs. BARR AND SONS.

GROUPS.

Mr. AMOS PERRY made a fine display with Michaelmas Daisies, showing the white, double

Snowball and several new varieties described under novelties (Silver Grenfell Medal).—Messrs. J. CHEAL AND SONS had two exhibits. One of these was composed of Dahlias, including several beautiful single and Star varieties (Silver Grenfell Medal).—The other group, of shrubs, included a showy set of Acers, with coloured foliage, numerous Cotoneasters and other ornamental berried plants (Silver Banksian Medal).—Mr. G. REUTHE and Messrs. MAXWELL AND BEALE were exhibitors of hardy flowers (Silver Banksian Medal).

Michaelmas Daisies were largely shown by Messrs. WM. CUTBUSH AND SON; this firm exhibited Amellus and Novae-Belgae varieties, as well as small-flowered sorts of the diffusus and horizontalis sections, thus demonstrating the great range of form and colour in these autumn flowers (Silver Grenfell Medal).

The Misses HOPKINS showed hardy flowers (Bronze Banksian Medal), and Messrs. REAMS-BOTTOM AND CO. brought Anemones from Ireland, and received a similar award.—Messrs. H. B. MAY AND SONS exhibited Ferns in variety (Bronze Flora Medal), and the Rev. J. H. PEMBERTON showed a few Roses of his own raising (Bronze Banksian Medal).

Messrs. G. BUNYARD AND CO. set up a formal, mound-like group of Michaelmas Daisies, Solidago, Heleniums, and a few other hardy flowers (Bronze Flora Medal).—Mr. L. R. RUSSELL had an interesting exhibit of trees and shrubs, his standard golden Ives attracting a great deal of attention (Silver Banksian Medal).—Messrs. ALLWOOD BROS. contributed fine blooms of perpetual Carnations and a large series of their hybrids of Dianthus Allwoodii (Silver Grenfell Medal).—Mr. W. WELLS, Junr., put up a brilliant bank of hardy flowers, chiefly varieties of Aster Amellus, and including the handsome varieties Advance and King George (Silver Flora Medal).

Mr. MAURICE PRICHARD's group of hardy flowers included a fine series of Aster Amellus varieties, Schizostylis coccinea and the handsome Helianthus Monarch (Silver Banksian Medal).—Messrs. ISAAC HOUSE AND SON showed their variously coloured forms of Scabiosa caucasica, ranging from pale lilac to deep blue (Silver Flora Medal).—Messrs. BARR AND SONS exhibited Gladiolus America in fine form, a beautiful set of Nerines, and autumn-flowering Crocuses (Silver-gilt Banksian Medal).

Messrs. B. LADHAMS, LTD., contributed the handsome Lobelia B. Ladhams and several other hardy sorts, associating these with Heleniums, Gladioli and Asters (Silver Flora Medal).—Messrs. BAKERS showed Asters (Bronze Banksian Medal), and Messrs. W. J. GODFREY AND SON sent Scabiosa Pride of Exmouth and Michaelmas Daisies in variety (Silver Banksian Medal).—Messrs. CARTER PAGE AND CO. were responsible for a bright and well-arranged display of Dahlias (Silver Flora Medal), and Mr. J. F. WEST showed Dahlias well, including such fine decorative sorts as Midas, David, Pres. Wilson and the bright-hued, single variety named Winter Sun (Silver Grenfell Medal).

Dahlias.

The Joint R.H.S. and N.D.S. Committee met at 11 o'clock and selected varieties mentioned below for trial at Wisley Gardens.

Present: Messrs. H. B. May (in the chair), A. Turner, J. Cheal, J. F. McLeod, J. B. Riding, Chas. H. Curtis, J. A. Jarrett, H. J. Jones, and E. H. Jenkins.

Crimson King (BURRELL AND CO.)—A brilliant, glowing crimson Paenony-flowered variety.—*Audrey* (BURRELL AND CO.) : A small-flowered Paenony Dahlia, with effective blooms on long, stiff stems; colour, golden fawn.—*Ivor* (BURRELL AND CO.) : A handsome Colerette variety, of orange-scarlet colour, with orange and yellow collar.—*Prudence* (BURRELL AND CO.) : A finely-formed, dark crimson Colerette variety, with white collar.—*Charm* (STREDWICK) : A charming Colerette sort, of capital form and delicate colouring—white, with rose shading and a creamy-white collar.—*Joan* (C. TURNER) : An elegant Star variety, creamy-white, with pale yellow centre.—*Leda* (C. TURNER) : A brilliant

Star variety of vivid orange colouring shading to rose at the tips of the segments.—*Ladas* (C. TURNER) : An unusually brilliant crimson scarlet Colerette variety, of fine form and substance, with yellow-tipped collar segments.—*Aurley Scarlet* (JARRETT) : A handsome soft crimson decorative variety.—*Stability* (JARRETT) : A glorious, large, finely-formed, clear canary-yellow decorative variety.—*Dicky Ellis* (JARRETT) : A Colerette variety, of good form and distinct old rose colour, with pale shading.—*Rigidity* (JARRETT) : A handsome, yellow decorative variety, practically identical with Stability in form and colour, but, we understand, of shorter habit than that variety.

Orchid Committee.

Present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. Secretary), C. J. Lucas, Fred K. Sander, S. W. Flory, T. Armstrong, J. E. Shill, Richard G. Thwaites, Frederick J. Hanbury, J. Wilson Potter, R. A. Rolfe, W. J. Kave, A. McBean, and Chas. H. Curtis.

AWARDS.

FIRST-CLASS CERTIFICATE.

Brasso-Laelio-Cattleya Amber (B.-L.-C., *The Baroness* × *C. Dowiana aurea*), from Baron Bruno Schröder, The Dell Park, Englefield Green (gr., Mr. J. E. Shill). A grand yellow hybrid, following in form the famous B.-L.-C. *The Baroness* (B.-C. Mrs. J. Leemann × L.-C. *Ophir*), but of larger size and perfect form. The flower is clear amber yellow, with rose purple freckling on the front of the lip.

AWARDS OF MERIT.

Brasso-Laelio-Cattleya Incunum, Fasey's var. (B.-L.-C. *Cooksonii* × *C. Phoebe*), from R. FASEY, Esq., Holly Bush Hill, Snaresbrook, (gr., Mr. E. J. Seymour). A good flower, equal in size to *Cattleya Dowiana*, but with the crimped, elongated lip of *C. Rhoda*; the colour is orange yellow, the lip bright crimson with thin yellow lines at the base.

Laelio-Cattleya Grand Monarch (L.-C. *Nella* × *C. Trianae Grand Monarch*), from Messrs. FLORY AND BLACK, Slough. A large and well-shaped flower in which the *C. Warneri* in the Veitchian L.-C. *Nella* gives fine proportions. The sepals and very broad petals are silver white, tinged with mauve. The lip is broad, coloured Tyrian purple, with white lines from the base to the centre.

Laelio-Cattleya Royal Purple (C. *Alexandra* × C. *Empress Frederick*). C. *Alexandra* is between *Carmen* and *Hardyana*, and one of Messrs. Flory and Black's hybrids, which they have now developed into the present very richly-coloured flower. The sepals and petals are violet coloured with white basal mid ribs, and freckling of white on the petals. The lip is deep purple with a yellow disc.

Brasso-Cattleya Olympus var. Nena (B.-C. *Mad. Chas. Maron* × C. *Hardyana*), from Messrs. FLORY AND BLACK. A fine form of the cross originally raised by Sir George Holford; the colour is cream-white, tinged with rose and with soft yellow disc to the lip.

GROUPS.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver-Gilt Flora Medal for a fine group of well flowered hybrids; in the centre were *Cattleya Maronii* hybrids with the bright, rosy *C. Armstrongiae* and some pretty yellow forms in which the varying, but always pretty, *Cattleya Golden Wren* and others of the *C. Venus* class were very effective. There were also many white hybrids, including some new crosses with *C. O'Brieniana alba*, and a good plant of that very pretty species. New *Odontiodas* and hybrid *Odontoglossums* were also shown, but the most remarkable plant was *Odontoglossum Pescatorei Armstrongiae*, with flowers as large as those of *O. crispum* and with purple tinted sepals having a few dark blotches.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for a good group of *Cattleyas*, *Laelio-Cattleyas* and *Odontoglossums*. Fine forms of *Cattleya Hardyana alba*, and the allied *C. Eleanor alba*, with other white *Cattleyas* were shown. Among

the Laelio-Cattleyas, plants of the fine type of L.-C. Sargon (C. Hardyana × L.-C. Lustre) were prominent. Among imported Orchids was *Oncidium Stanleyi*, a supposed natural hybrid of O. Marshallianum, the plant shown being the original specimen.

Messrs. FLORY AND BLACK, Slough, were awarded a Silver Banksian Medal for a select group in which were *Cattleya Lacrozeae* (Hardyana × Adula), a very handsome hybrid with enlarged C. Adula form; *Brasso-Laelio-Cattleya Bella* (B.-L.-C. Morna × C. Dowiana aurea); *Laelio-Cattleya Jaquenetta* (L.-C. Lustre × C. Empress Frederick) and L.-C. Nerissa (C. Antiope × L.-C. luminosa).

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group in which were *Cattleya Hardyana alba*, the very large and handsome white C. Lady Veitch, the new yellow and purple, *Laelio-Cattleya Glory*; L.-C. Soulangue, and some choice *Cypripediums*.

OTHER EXHIBITS.

Dr. MIGUEL LACROZE, Bryndir, Roehampton (gr. Mr. Taylor), showed, in improved form, the handsome *Laelio-Cattleya St. George* Bryndir variety (L.-C. St. Gothard × C. Fabia), and a very fine form of L.-C. Serbia.

A. J. HOLLINGTON, Esq., Forty Hill, Enfield (gr. Mr. May), showed *Cattleya Alice Hollington*, a showy flower of the C. Hardyana class, of unrecorded parentage, and C. Amy May (Empress Frederick × Dowiana aurea), like a light coloured C. Dowiana.

Messrs. CHARLESWORTH AND Co., Hayward's Heath, showed a selection of hybrids, including a distinct form of *Cattleya Lord Rothschild*, C. Mrs. Pitt Charlesworth's variety, the yellow L.-C. Doreen and *Cypripedium Ivanhoe*.

Fruit and Vegetable Committee.

Present: Messrs. C. G. A. Nix (chairman), Jos. Cheal, A. H. Pearson, Geo. F. Tinley, A. W. Metcalfe, S. B. Dicks, J. C. Allgrove, G. P. Berry, W. Bates, E. A. Bunyard, W. Woodward, W. Wilks, and S. T. Wright.

A Gold Medal was awarded to Messrs. SUTTON AND SONS for an exhibit of Onions. This splendid exhibit included fifty-eight distinct varieties, and the quality of the bulbs was the subject of general comment; it was the finest display of Onions ever staged in the Vincent Square Hall. Some of the bulbs weighed 3 lb. each, and there were excellent specimens of the useful Queen variety, about 1 oz. each in weight showing the wide range in size. The more notable sorts were White Italian, Blood Red, Deptford, Selected Ailsa Craig, Improved Reading, Prizetaker, Rousham Park, Giant Lemon Rocca, Large Spanish Mammoth, and Silver Globe.

A Gold Medal was also awarded to Messrs. DOBBIE AND Co. for a collection of vegetables. Potatoes were the outstanding feature of this well-staged exhibit, the tubers of Resistant Snowdrop, Dargill Early, Edzell Blue, Mauve Queen, The Bishop, and Climax being perfect in every respect, and all the sorts were immune to wart disease. Of the other kinds Selected Stump Rooted Carrots, Champion Leeks, Golden Globe, Main Crop, Excelsior, and Ailsa Craig Onions; Tomatos, Holyrood, Cherry Ripe, and Kondine Red were of high quality.

A Silver Knightian Medal was awarded to Messrs. G. G. WHITELEGG AND Co for a collection of Apples and Pears. This excellent exhibit included such varieties of Apples as Queen Caroline, Golden Noble, New Hawthornden, Peasgood's Nonsuch, Egremont Russet, and Tyler's Kernel, whilst the best Pears were Doyenné, Boussac, Conference, Emile d'Heyst, and Doyenné du Comice.

Messrs. G. BUNYARD, LTD., showed Strawberry St. Fiacre, which was given an Award of Merit in 1915. The award was confirmed.

Competitive Vegetable Classes.

The special vegetable show was only moderately successful compared with some former years. There was a great falling off in the classes for collections, and the exhibits generally showed the effects of the unfavourable season. A detailed report will be published in our next issue.

Obituary.

Mr. James Davidson.—We regret to announce the death of Mr. James Davidson, at Dumfries on the 12th inst. Mr. Davidson, who was formerly in business as a nurseryman at Moffat, retired some years ago, and has been in ill-health for a considerable time. He is survived by two daughters and two sons, three other sons having died while on service during the war, in which all five did their part.

Lieutenant-General Stewart.—We have to record the death, at his residence, Carruchan, by Dumfries, on September 12, of Lieutenant-General John M. Stewart, in his 80th year. General Stewart was a keen gardener, not only since taking up his residence at Carruchan, but also while on service in India. On his retirement from the Indian Army more than twenty years ago General Stewart entered upon his residence at Carruchan, where flowers had always been carefully cultivated, and there he paid special attention to hardy plants, such as Lupins, Delphiniums, Roses and alpine flowers. He was greatly esteemed, and his horticultural acquaintances delighted to meet him, and to see his keen interest in their plants and those he grew so well himself.

J. Watson.—Mr. J. Watson, gardener and bailiff at Southborough Park, Surbiton, died on the 8th inst., at his residence, Southborough Park Lodge, Langley Avenue, Surbiton. He had been gardener and bailiff at Southborough Park for half a century, and he was taken ill on the same day as his employer, Mrs. Cundy, died, and only survived her by a week. He was highly esteemed by the late Captain Cundy and Mrs. Cundy, both of whom left him a substantial legacy. Mr. Watson was at one time a successful exhibitor, especially of Chrysanthemums. He leaves three sons and six daughters; his son John is gardener at Pexholme Court, Dorking, and has attained fame as a grower of Sweet Peas.

A. J. Keeling.—The death of this well-known Orchid grower and nurseryman occurred at The Grange Nurseries, Westgate Hill, Bradford, on the 13th inst. Mr. Keeling was 62 years of age and had been in failing health for some time past, but his end came somewhat suddenly. He had a life-long association with Orchids. Forty years ago, when grower for Drewett O. Drewett, Esq., Riding-Mill-on-Tyne, he was most successful as a raiser of *Cypripediums*, and introduced many very fine hybrids during the ten years he was in charge of this collection. The late Mr. Joseph Charlesworth, whose fine work in hybridisation the amateur and trade growers have freely praised, was then conducting his first experiments and induced Mr. Keeling to come to the Heaton Nurseries. The two worked together for some few years, and it is interesting to recall how carefully guarded was this early experimental work. Some twenty-four years ago Mr. Keeling decided to start on his own account. As a raiser of *Cypripediums* he had great success and the Orchid world has accorded him full credit for many fine hybrids. His keen interest lasted to within a few minutes previous to his death, when he inquired if a certain hybrid had flowered. Of jovial and pleasant personality, he was well known and esteemed in the North of England. For many years he was a member of the committee of the North of England Orchid Society. He leaves a widow and a large family of married sons and daughters. The eldest son, Mr. Arthur Keeling, who has had principal charge of the business for some years past, will continue its management. W. M.

INQUIRY.

STRAWBERRY KOOL.

CAN any of your readers inform me where I may obtain plants of the Dutch (I think) Strawberry Kool? Ernest Willoughby, Brompton, Yorks.

ANSWERS TO CORRESPONDENTS.

APPLE WEEVIL.—*Fruit Grower.*—We fear there is no certain remedy for Apple blossom weevil. Some growers claim benefit from spraying with thick limewash just before the fruit buds burst in spring to expose the clusters of blossom buds. Others believe in spraying with lime-sulphur at winter strength when the unopened blossom buds are exposed in cluster form. This causes scorching of the young foliage and petals, but is said not to injure the bloom seriously, though it seems risky. This pest has been troublesome for several years past, but is probably now on the decline. It is favoured by seasons in which the bloom remains for a long time in the bud, for it is at this stage only that the weevil can lay her eggs.

CUTTINGS OF APPLES AND PEARS.—*Deudron.*—It is possible to get cuttings of some varieties of Apples and Pears to strike, though results are always very uncertain. Even if they are successfully rooted, the resulting trees are not at all likely to be satisfactory, and usually die at an early age. Grafting or budding on recognised stocks is both simpler and much more satisfactory. If you wish to try cuttings select shoots 9 or 10 in. long in autumn, after the leaves have fallen, and cut them just below a bud at the base, and just above one at the top. Plant them at once, pressing them into the soil, allowing only two or three buds above the ground level.

HARDY FERNS.—*J. C.*: The value of hardy Ferns depends entirely upon the beauty and distinctness of the varietal forms they represent, as well as upon the size of the specimens, and whether they are lifted from the open ground, or have been grown in pots.

MELONS UNHEALTHY.—*W. T. E.* The plants are decayed at the collar and a fungus, the species of which cannot be determined, has gained admittance, although it is not the primary cause of the trouble. You should plant on a mound and take care that the stem portion is not buried deeply, also see that the collar is not kept excessively wet.

NAMES OF PLANTS.—*A. Neal.*—1, *Aralia chinensis*; 2, *Catalpa bignonioides*; 3, *Gymnocladus canadensis*; 4, *Kolreuteria paniculata*; 5, *Acer platanoides* var.; 6, *Lespedeza bicolor*; 7, *Hypericum inodorum*; 8, *Lonicera* sp. (send in flower); 9, Missing; 10, *Euonymus radicans* var. *variegatus*.

PEARS UNSATISFACTORY.—*H. W. M. P.*—The specking, cracking, and deformity of the Pears are all due to the Pear scab disease, which is common this season. Spray the trees thoroughly with lime-sulphur wash in February, or as late as you dare before the bursting of the buds. Lime-sulphur may be bought as a concentrated liquid, one part of which is used with 15 to 20 parts of water for winter spraying. This treatment should give you cleaner fruit, but you could make more certain of it by spraying again with lime-sulphur at summer strength (one part in 40 of water) soon after the fall of the petals, and a third time three or four weeks later.

SMALLHOLDER.—*Constant Reader.*—Unless the tenancy agreement provides otherwise, a yearly tenant is entitled to six months' notice to quit, expiring on the anniversary of the day on which his tenancy commenced. As to your rights as a smallholder, you should consult a solicitor, and show him your tenancy agreement if you have one.

TOMATOS DISEASED.—*H. T. W.* The Tomato disease, commonly known as Blight, is caused by a fungus, *Phytophthora infestans*. The plants should be sprayed in an early stage with Bordeaux mixture as a preventive.

Communications Received.—S. O.—S. J. C.—A. L. I. C. M.—J. W.—T. H.—C. F.—D. A.—C. F.—H. B.—C. M.—D. W.—F. A.—D. W.—J. H.—E. H.—A. H.—J. D.—D. H.—D.—J. W.—F. D.—E. C.—W. and W., Ltd.—J. L. and Son.

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ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street,
 Covent Garden, London. *Wednesday, September 29,*
 10 a.m.; Bar. 30.16, temp. 63°. Weather—Bright.

"Quarantine
No. 37."

American gardens are suffering a considerable diminution in interest and beauty as a result of the operation

of the Prohibition Order made by the American Federal Horticultural Board under the power of an Act of Congress. Hitherto the gardens of the United States have been rendered increasingly beautiful by plants imported from various European countries, but as the Order now excludes the importation of practically all ornamental plants and most kinds of bulbs, amateur gardeners find themselves unable to cultivate many of their garden favourites. The Order, familiarly known as "Quarantine No. 37," was imposed ostensibly for the purpose of excluding injurious insects and destructive diseases, and we have no quarrel with any country which takes this or similar steps to prohibit the importation of everything likely to be destructive to the garden, farm and orchard. The operation of the Order has, however, had the boomerang effect of limiting business and curtailing the beauty of gardens. Moreover, it is difficult to understand why such an Order admits Hyacinth bulbs but excludes those of the Scilla. It is to the actual working of the Order that so large a number of prominent American horticulturists take exception, and they have banded themselves together for the purpose of compiling data that may in due course form the basis of a working solution of the problem, which will commend itself to garden lovers and possibly to those administrators at Washington upon whom the onus of carrying out the provisions of the law falls. The Pennsylvania Horticultural Society, through its representative, Mr. J. C. Wister, protests that it can find no proof of the necessity for a general quarantine. It resents the assumption that plant pests do not reach the United States on materials other than hor-

cultural products and it objects to the rulings of the Federal Horticultural Board in carrying out the quarantine regulations which the Society regards as arbitrary and inconsistent. Alternatively, the Society favours an inspection of imported plants at ports of entry, as being a more logical and effective arrangement than the present one of shipping every admitted plant or bulb to Washington and thence to its destination. It also considers that the attitude and action of the Federal Horticultural Board in assuming the rôle of prosecuting attorney against plants and introducers of plants, as well as that of judge and jury, are not just. Prof. Sargent, of the Arnold Arboretum, points out that the Harvard University has agreed by contract to grow and display every tree and shrub which can be cultivated in the New England climate. In order to fulfil this contract the University has been importing plants and seeds since 1874, and for forty years has been carrying on explorations in all parts of North America, Japan, China, Korea, Manchuria and Siberia. These explorations have been undertaken for the purpose of introducing trees and other useful plants previously unknown. The Arboretum has never been charged with introducing any serious plant disease or dangerous insect on the many thousands of plants which it has imported, often with soil about their roots, and from every country of the Northern hemisphere, or on any of the millions of seedlings it has raised and distributed. The Arboretum desired to import a few plants from Europe in the autumn of 1919 and received permission from the Federal Horticultural Board to do so on condition that the plants were sent first to Washington for inspection and disinfection. It was impossible to arrange for the inspection of these plants at Boston, and having had unfortunate experiences with earlier importations sent to Washington for inspection by agents of the Federal Horticultural Board, the Arboretum authorities decided to abandon the importation of plants and seeds until the present Order is modified. As a consequence, it is believed that this inability on the part of the Arboretum to continue its work will be a serious blow to horticultural progress in the United States. At a conference held recently in the Museum of Natural History, New York, the representatives of various horticultural and floricultural Societies discussed the whole effect of the Order and concluded that, while the fact of quarantine could not be lightly set aside, its administration with some regard to the interest of the art and industry of horticulture might be brought about in a way which would prove helpful to the entire country. The operation of the order adversely affects the horticulture industry of many European countries which formerly exported large quantities of both economic and ornamental plants to the United States, and while this loss of business is greatly deplored by commercial horticulturists in England, Belgium, Holland and France, its effect is no less deplored by all who desire to cultivate in the United States those plants which Europe is prepared to send them.

Autumn Exhibition in Paris.—The Société Nationale d'Horticulture de France will hold a grand exhibition of autumn flowers from October 27th to November 5th inclusive.

R.H.S. Journal.—The Editor of the *Journal* of the Royal Horticultural Society, feeling sure that many of our readers are interested in the important paper on Nuts in the last issue of that *Journal*, wishes to correct an error therein by which the figure of the variety "Garibaldi" was labelled "Duke

of Edinburgh," and that of "Duke of Edinburgh" "Garibaldi."

Flowers and Matrimony.—The invariable and happy custom of associating flowers with a wedding ceremony has led an enterprising American florist to offer a complete marriage service, free, to the first couple who will use his establishment for the ceremony. By way of encouragement and advertisement, he has decorated a corridor with Palms, leading to a secluded room, where a bank of Ferns, before which the happy couple will stand to declare their vows, is flanked by large baskets of American Beauty Roses, while on either side Clematises twine around trellis work. All that remains is for a gentleman to bring along the lady, the licence, and the clergyman.

A Prostrate-growing Potato.—Messrs. R. N. Salaman and I. W. Lesley describe, in *The Journal of Genetics*, vol. x, No. 1, a prostrate variety of Potato which they have discovered in breeding experiments. This new type of Potato, which is said to breed true, is suggested as being useful for cultivators in semi-arid regions, since the foliage, lying on the ground, has a considerable effect in conserving the soil moisture. A procumbent variety, the stems of which turn up at the end, has also appeared, and it is stated that in both these types the crop of tubers is normal.

Vegetable Names in America.—At a meeting of the Vegetable Growers' Association of America, it was stated that there are no fewer than 10,000 names for 1,000 actual varieties of vegetables in America. The Association has formed a committee for the purpose of dealing with the nomenclature of vegetables, and it is estimated that it will probably take five years before the standardising of names is completed. It is suggested that all new varieties shall be registered and that it will then be impossible for a similar variety to be sent out under a new name.

Popularity of Flower Shows.—The following statistics relating to the recent flower show in the Abbey Park, Leicester, show that public interest in flower shows is as keen or even keener than in pre-war days. The attendance on the two days totalled 51,840, against the previous highest attendance of 42,627 in 1909. The statement of accounts show the receipt of £1,939 18s. 6d., after paying entertainment tax to the amount of £591 14s. 5d.; expenditure, £1,155 9s. 1d. (including £200 contribution towards music in the parks), leaving a balance of £184 9s. 5d. The Committee intend to revise the schedule of prizes next year, in the hope of inducing more competitors to enter. They also propose to reorganise the arrangements for the accommodation of visitors.

R.H.S. Fruit Show.—The competitive fruit Show of the Royal Horticultural Society will be held on Tuesday next, the 5th inst., in the Vincent Square Hall, Westminster. The schedule comprises 101 classes, the greater number being for single dishes. The "Bunyard" Silver Cup is offered for the most promising seedling Apple or Pear which has not been previously exhibited at any of the Society's meetings during the years 1919-20. It will be remembered that last year Apple Queen Mary, shown by Mr. E. J. Parsons, of Worcester, was chosen as worthy of being shown again in 1920 for this cup. Judging will commence at 11 a.m., and the Fruit and Vegetable Committee meets at 12.30 p.m. The Floral Committee and the Orchid Committee will meet as usual to adjudicate on plants submitted for awards only. At the 3 o'clock meeting of the Fellows a lecture will be delivered by Mr. E. A. Bunyard, F.L.S., on "The Winter Study of Fruit Trees." The exhibition will remain open until 6 p.m.

Ashridge Gardens.—These famous Berkhamsted gardens are open to the public during certain Sundays of the year; they were visited by about 2,000 persons during the four Sundays of August. Mr. David Robertson, the gardener, informs us that the visitors came by motor-cars and char-a-bancs, and from such places as

London, Watford, Luton and St. Albans. The flower gardens are the great feature of the place and, as showing how extensive the summer bedding is, it may be stated that no fewer than 10,000 Begonias alone are employed in the flower beds and borders.

An Interesting "Find" in Vancouver.—Mr. A. D. Webster, who recently left this country to settle with friends in Canada, sends the following interesting letter describing his discovery of *Spiranthes Romanzoffiana* in that country:—"I was fortunate enough to meet with the rare Orchid, *Spiranthes Romanzoffiana* (Lady's Tresses), in small quantity by the fringe of a burnt-out wood at Point Grey, Vancouver. In Britain it has only a few stations in Ireland, particularly at Bantry Bay, near Cork, and is unknown elsewhere in Europe. From Bantry the late Mr. W. E. Gumbleton sent me living specimens of the plant, which were figured in *British Orchids*, from drawings by the late Mr. F. W. Burbridge, of the Trinity Botanical Gardens, Dublin. It is a sweet little Orchid, with beautiful, fragrant flowers grow in dense, spirally-arranged spikes and of the finest white. The interest I felt in again renewing friendship with this rarest and most interesting of our British Orchids may readily be imagined."

Tram Accident Caused by Wet Leaves.—Fallen wet leaves on a public highway, especially in the case of a wood-paved road, are often the cause of accidents. A few days ago some wet leaves lying upon the tramway rails in Lancaster caused a tramcar to get out of control, leave the rails and dash into some buildings, with the result that many passengers were injured and one died from the effects of injuries received. Where leaves are likely to fall on a much used road in autumn, the authorities cannot pay too much attention to road cleaning.

Legacy for the Maintenance of a Recreation Ground.—By the terms of the will of the late Canon Rawnsley, of Allan Bank, Grasmere, Westmoreland, the sum of £1,000 is left to the Urban District Council of Grasmere for the maintenance of the recreation ground at Broadgate Meadow.

Extension of Summer Time.—The Government have decided, in view of the possible coal strike, that the return from "summer time" to Greenwich time, which would normally have taken place at 2 a.m. on the night of Sunday—Monday last, shall be postponed for a time. An order in Council will therefore be made substituting October 25 for September 27 as the date when "summer time" will end.

Agricultural Wages.—Sir Arthur Griffith-Boscawen, in an address to Cornish farmers at Liskeard on the 25th ult., stated it was all-important that farm labourers should be a contented and well-paid class and that the best should be kept on the soil; for that reason the Agricultural Wages Board was to be made permanent. But no sort of rigid factory hours could be tolerated on the farm, for the conditions and work were entirely different to other occupations, and the men worked in the open, not in hot, stuffy rooms. To regulate farms as factories was impossible. The new Agricultural Bill aimed at giving farmers security, and they could not be expected to farm in the nation's interest unless the nation made it worth their while.

Species of Pterocarya in the Arnold Arboretum.—Of species of *Pterocarya* in cultivation it appears* that the Caucasian *Pterocarya fraxinifolia*, originally brought to Europe from Persia by Michaux, has proved difficult to establish in the Arnold Arboretum. The Chinese *Pterocarya stenoptera* appears to be tender alike in northern Europe and the northern United States of America, but the natural hybrid between it and *P. fraxinifolia*, known as *P. Rehderiana*, is a beautiful, fast-growing tree, hardier and more vigorous than either of its parents. The grove of *P. Rehderiana* in the

Arnold Arboretum flowers and fruits every year and also produces suckers freely. The Japanese species, *P. rhoifolia*, has been growing at the Arboretum since 1893 and has proved to be one of the handsomest and hardiest of the trees introduced from Eastern Asia. It is suggested that it would prove a good subject for parks, and possibly for street planting.

Plant Sensitiveness.—Mr. Jules Daveau, curator of the Montpellier Botanic Garden, gives* an example of plant sensitiveness which will be new to most plant-physiologists. According to Mr. Daveau, if the flowering stem of a *Verbascum*, e.g. *V. Thapsus*, be struck with a stick the calyxes of the open flowers begin to contract after a lapse of some thirty seconds, and their contraction is accompanied by the fall of the open corollas.

Botanical Magazine.—Vol. XVI. of the *Botanical Magazine*, comprising the monthly parts for July, August and September, 1920, contains illustrations and descriptions of the following eleven plants:—

NUPHAR POLYSEPALUM, tab. 8852, a native of mountain lakes in Colorado, has flowers larger than any other *Nuphar*, with nine petaloid sepals, compared with six in the other species. The rich plum colour of the anthers adds very materially to the attractiveness of the flower. The leaves are bronze green with a red flush, and are developed well above the water, but eventually bend down to the surface of the pond.

PLEUROTHALLIS GRANDIS, tab. 8853, a native of Costa Rica, belonging to Lindley's group *Macrophyllae Racemosae*, and with flowers twice as large as those of *P. lamellaris*. The plant first flowered at Kew in September, 1917. The flowers are tinged with brown and some of the segments have rose-coloured lines on a yellow ground.

COTONEASTER SEROTINA, tab. 8854, a new species from Western China, where it was found by Mr. G. Forrest. This is the same plant that was certificated at the R.H.S. meeting on January 13, 1919, as *C. glaucophylla*, from which it is distinguished by its green leaves. *C. serotina* is easy of cultivation and in sunny situations produces a good crop of flowers that are followed by scarlet fruits in lax corymbs.

DAPHNE TANGUTICA, tab. 8855. This also is a Chinese species and was originally discovered by Przewalski, in Kansu. Mr. Reginald Farrer, who sent plants to this country in 1914, from Kansu, describes it as a dense, low bush about a foot high. This species appears to be very floriferous, and it is stated that a plant at Arley Castle, barely eighteen inches high, bore fifty heads of blossom. The colour of the flowers is rosy-purple.

COELOGYNE INTEGERRIMA, tab. 8856. This Orchid, a native of the Philippines, was discovered in 1900, and specimens were exhibited by Messrs. Sander and Sons, at the Chelsea Show of the R.H.S., in 1913. Apart from the dark-brown colouring on the pandurate lip, the colour is light green.

BERBERIS ATROCARPA, tab. 8857. This is one of the numerous Barberries introduced from China by Mr. E. H. Wilson. It has angular, grooved branchlets, long, narrow leaves, and formidable spines. The fruits are at first covered with a blue bloom, but become jet black.

ALLIUM SIKKIMENSE, tab. 8858. This is an old garden plant, first discovered in August, 1848, by Sir Joseph Hooker, in Alpine Sikkim. So long ago as March, 1887, Mr. H. J. Elwes flowered the species at Colesborne. The inflorescence is an umbel, with as many as twenty flowers; the perianth segments are coloured blue purple.

SABIA LATIFOLIA, tab. 8859. The plants in cultivation in this country were raised from seeds collected by Mr. Wilson in the neighbourhood of Ta-chien-lu, China. Miss Willmott has grown the plant at Warley Place for

the past nine years, where it flowers and ripens its fruits every season. The flowers are axillary and developed in, usually, three-flowered cymes. The petals are greenish-yellow, passing to reddish-brown. The fruits are a bright blue, and about a third of an inch long.

ACACIA SPECTABILIS, tab. 8860. This is a well-known greenhouse plant, a native of Eastern Australia. The inflorescence consists of a raceme of globose heads about half an inch across.

ARISAEMA FARGESII, tab. 8861. This very striking Aroid has an inarched spathe, which is purple, marked with whitish lines; the hooded part is traversed with broad bands of brownish crimson on a greenish-yellow ground.

STRANVAESIA SALICIFOLIA, tab. 8862. Although allied to *S. undulata*, this species is taller, of much stronger growth and less compact in habit. The plant flowers freely in this country and sets a number of red, globose fruits, rendering it a particularly handsome object in autumn.

Horticultural Club.—A special general meeting of members of the Horticultural Club will be held in the Club Room at the Royal Horticultural Hall, Vincent Square, Westminster, on Tuesday, October 5th, at 3.30 p.m. (the occasion of the R.H.S. Fruit Show).

Horticultural Trades Association.—This useful Association held its 22nd annual meeting at Liverpool on September 22, and 23, Mr. Charles E. Pearson (Lowdham, Notts.) presiding. There was a capital attendance of horticultural delegates from all parts of the British Isles, including Ireland, and in addition to the formal agenda an attractive social programme had been arranged by members of the horticultural trade in Liverpool. A dinner was given at the Adelphi Hotel on Wednesday, and on the following day members visited Messrs. Bees' Nurseries at Sealand, N. Wales, and at Chester where they were hospitably entertained by this firm. Amongst the subjects discussed at the meeting were the new railway rates and classifications, the standardisation of terms of trading, and the dumping of foreign Roses. Mr. G. W. Leak (Wisbech) was elected President for the ensuing year. Under the new constitution of the Association many new members were elected to the Council, amongst them being Messrs. Horton (Liverpool), Clibrans (Altrincham), Notcutt (Suffolk), and Murrell (Shropshire). The Association, now incorporated and licensed by the Board of Trade, is making good progress, and, as most of our readers are aware, it has permanent London offices at 18, Bedford Square, W.C.1.

Appointments for the Ensuing Week.—Monday, October 4: National Chrysanthemum Society's Floral Committee meet at Exeter Hall, Strand, at 3 p.m.—Tuesday, October 5: R.H.S. Committee's meetings and Fruit Show; Scottish Horticultural Association meeting.—Wednesday, October 6: Carnwath Chrysanthemum Society's Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Exploration in California.*

—We are happy to announce the departure of Mr. Hartweg on a new expedition, on behalf of the Horticultural Society. Upon the present occasion the ground to be investigated is California, the riches of which were scarcely touched by Mr. Douglas. It is a country abounding in handsome annuals and perennials, beautiful bushes, and noble trees, all of which will be hardy enough to bear the climate of England. The expedition is to last three years, and the experience which Mr. Hartweg possesses of Spanish America, together with his zeal and activity, and the ample protection which has been extended to him by Her Majesty's Government, authorise us to congratulate the Fellows of the Society beforehand upon the valuable plants which they may expect to obtain through his means.—*Gardeners' Chronicle*, October 4, 1845.

Publication Received.—*The Lure of the Hive*, by H. Clark, P. Stevens, 7a, Slawson Street, Leicester. 5d. post free.

* "Arnold Arboretum, Bulletin of Popular Information," No. 12, July 19, 1920.

* *Revue Horticole*, No. 9 19, Sept. 1920

NOTES FROM KEW.

WATSONIA ARDERNEL.

The white Bugle Flower of South Africa is an interesting feature in a large bed bordering the pond at Kew. There are approximately one hundred spikes of snowy white flowers, $3\frac{1}{2}$ to 4 feet high, with an effective undergrowth of Montbretias. The branched spikes give a succession of flowers for fully two months—mid-August to mid-October. Another name for this bulbous plant is *Watsonia Meriana* var. *alba*.

HYDRANGEA PANICULATA.

The variety *grandiflora* is perhaps better known than the type, because it is a very useful hardy shrub for forcing. In the open garden however, there is room for both, the species being three to four weeks later in flowering. In Japan it is said to be quite tree-like in growth, but as the plants produce very much larger inflorescences when liberally pruned in spring, our garden specimens usually average 4 or 5 feet high, though one large bush near the Japanese Gate is fully 8 feet in height.

PICEA BREWERIANA.

The development of cones on a specimen tree of Brewer's Weeping Spruce, near the Pagoda at Kew, will be of considerable interest to lovers of Conifers. Presented to Kew by Professor Sargent, of the Arnold Arboretum, in 1907, the tree is now 12 feet in height. There is no record of a larger tree in the British Isles, and this is the first time it has borne cones. They are drooping, narrowly cylindrical, and about $3\frac{1}{2}$ inches long. The tree is of limited distribution in the Siskiyon Mountains of California and Oregon, where the tallest trees are 100 to 120 feet in height.

PYRUS. ROTUNDIFOLIA.

SEVERAL trees of this Sorbus, the Service Tree of Fontainebleau, are carrying heavy crops of fruits. It is said to be of hybrid origin, with the Whitebeam (*P. Aria*), and the Wild Service Tree (*P. Torminalis*), as its parents. The clusters of orange-brown fruits, half an inch in diameter, have been attractive for some time. Now that the fruit is ripening the trees are receiving a large share of attention from black-birds and thrushes. The persistent effort of the birds to obtain the fruit is a source of considerable interest to visitors.

DAVIDIA INVOLUCRATA.

SEVERAL specimens of this interesting Chinese tree flowered in the open at Kew during May, and are now bearing a considerable number of their green fruits which are about the size of a Walnut, and contain a hard, ridged nut. Seedlings are growing at Kew raised from home-ripened fruits. The cultivator should sow these as soon as ripe, and patience is necessary, for germination may take from one to three years. Some botanists consider there are three forms, or species, of *Davidia*. It is *D. laeta*, with a smooth, green undersurface to the leaf, which flowers and fruits so well at Kew in the open air. It was introduced by Mr. E. H. Wilson in 1901. *D. Viluoriniana*, introduced by Père Farges in 1897, has a smooth, glaucous undersurface to the leaf. This has flowered and ripened fruits in the Temperate House. The true *D. involucrata*, introduced by Mr. Wilson in 1905, is the most ornamental of the three. It has a distinct red petiole and leaf-veins, and the leaves are covered with a whitish felt beneath. There is no record of this form having flowered in this country.

CRATAEGUS ORIENTALIS.

In foliage, flower and fruit this is one of the most ornamental Thorns. As a lawn specimen it is of considerable value, forming a small, round-headed tree, ultimately 13 or 20 feet in height. The globose red fruits, three-quarters of an inch in diameter, are freely borne in most seasons, and are very attractive in company with the small, deeply cut, grey-green leaves. The variety *sanguinea*, has dark vinous-red fruits. A. O.

TREES AND SHRUBS.

NOTOSPARTIUM CARMICHAELIAE.

This shrub, the Pink Broom of New Zealand, derives its popular name from the general resemblance in its leafless branches to a member of the Broom family. The flowers, which are of a purplish-pink tint, are borne in clusters at the points of the shoots, which are more or less pendulous, so that a plant in full bloom forms a very graceful specimen. It is well suited as a shrub for the bolder type of rockwork.

Unfortunately, in common with many New Zealand shrubs, this *Notospartium* is none too hardy, and even in the neighbourhood of London is liable to be injured, or even killed outright, during a severe winter. Stagnant moisture at that season is very fatal to its success, hence it should be planted in well-drained soil of a light, loamy nature, and fully exposed to the sun. In its earlier stages the young shoots are

CULTURAL MEMORANDA.

PROPAGATING RETINOSPORAS.

Those accustomed to the raising of Conifers from seeds will have noted, particularly in the case of several species of *Cupressus* and *Thuja*, that the juvenile type of foliage is widely different from that of the adult. In the young state the leaves are comparatively long and spreading, whilst in the adult stage some of them are little more than scales. Furthermore, when raised in quantity from seed it will be found that some individuals remain in the juvenile stage much longer than others; indeed, occasionally that character becomes fixed, or nearly so. At one time such juvenile forms were known under the generic name of *Retinospora*.

Of the *Cupressus* the most marked is *C. plumosa*, represented by two or three colour varieties, and *C. squarrosa*, with an even more juvenile type of foliage than the preceding.



FIG. 73.—NOTOSPARTIUM CARMICHAELIAE; FLOWERS PINK.

liable to be cut back in winter. When in a flourishing state seeds are often produced, and they form the most suitable mode of increase, though when it was a scarce plant I rooted it from cuttings.

Notospartium Carmichaeliae was given a First-Class Certificate by the Royal Horticultural Society in 1883, and grew well on the slopes of Messrs. J. Veitch and Sons' Coombe Wood Nursery, where so many choice subjects found a congenial home.

In the West of England it behaves in a very satisfactory manner, and might with advantage be planted more often than it is where the conditions are favourable.

A near ally of the preceding, and like it a native of New Zealand, but with practically leafless shoots, is *Carmichaelia flagelliformis*, producing clusters of tiny purplish lilac flower freely for some distance along the shoots. Generally speaking, it is somewhat more hardy than the *Notospartium*, but is not so attractive when in bloom. Both belong to the natural order Leguminosae. W. T.

This is still very often met with as *Retinospora squarrosa*, but its correct name is *Cupressus pisifera squarrosa*.

Under the name of *Retinospora ericoides*, a dwarf, rounded shrub, which acquires a brownish tinge in winter, is often met with in gardens. It is really a permanent juvenile form of *Thuja orientalis*; a corresponding one of *Thuja occidentalis* being known popularly as *Retinospora dubia*. In propagating these different Conifers from cuttings it will be found that those formed of the shoots clothed with juvenile foliage will strike root much more readily than those taken from the adult portions of the plant. Those in which the infantile leaves are permanently established, such as the few examples referred to above, are among the easiest of all Conifers to strike from cuttings. If shoots from four to five inches long are taken in the summer or early autumn and dibbled firmly into well-drained pots of sandy soil, they will, if kept close in a frame or covered with a bell glass, root without difficulty. *Old Florist*

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens, Kew.

Zonal Pelargoniums.—Plants intended for winter flowering should be placed in a light, airy house, where fire-heat is available, as the atmosphere must be kept dry and buoyant, for Pelargoniums are very impatient of much damp at this time, and quickly suffer if over-watered. There are few brighter subjects during the autumn months for the decoration of the greenhouse and conservatory. But, unfortunately, in the neighbourhood of London and other large towns, where fogs are prevalent, they are very uncertain subjects, as one night's fog is sufficient to ruin the whole season's work. After they are housed, these plants are very subject to attacks of a small green caterpillar, which eats both leaves and flower buds. The plants should be examined every day; if held sideways and shaken gently, many of the caterpillars will tumble off.

Bulbs.—Continue to pot bulbs as they come to hand. Early Tulips may be placed in 48-sized pots, or cutting boxes, where they are required in quantity as cut blooms. Darwin Tulips require much bigger pots, eight-inch at least, if they are to be grown successfully. The use of small pots explains the frequent failure of this type of Tulip. It must also be remembered that they will not bear the same amount of forcing as early Tulips, and that all varieties are not suitable for forcing. A few of the best for the purpose are *Baronne de la Tonayne*, *Erguste*, *Farncombe*, *Sanders*, *Glow*, *King Harold*, *Loveliness*, *Gretchen*, *Pride of Haarlem*, *Rev. Ewbank*, *Wm. Copland*, *William Pitt* and *Bronze Queen*.

Gladiolus.—Early-flowering varieties of Gladiolus should now be potted. Place six or eight corms in pots six or seven inches in diameter. These, like Darwin Tulips, do better in larger sized pots than are usually afforded them, for, in proportion to their top growth, they make a larger quantity of roots. Where cultivated in quantity for supplying cut flowers they may be grown in boxes, or even planted out in frames. Some of the more popular varieties are *G. Colvillei*, *G. Colvillei* var. *The Bride*, *G. insignis*, *Ne Plus Ultra*, *Ackermannii*, *Blushing Bride*, *Fire King*, *General Scott*, *Peach Blossom* and *Sappho*.

THE ORCHID HOUSES.

By T. W. BRISCOM, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Thunia.—These plants have ripened their pseudo-bulbs and, if the foliage has fallen, they may be placed on a shelf or in any light position, where they may remain for the winter and enjoy a decided rest. No water will be needed at the roots, and the temperature must not fall below 50°.

Phalaenopsis.—The winter-flowering species of *Phalaenopsis*, such as *P. Stuartiana*, *P. Sanderiana*, *P. amabilis* and *P. Rimstadiana*, will soon be pushing up their flower spikes, to which slugs are extremely partial. To prevent these pests causing damage, a piece of cotton wool placed around the base of each spike will retard their progress, but it is not always an infallible remedy. Standing each plant over a saucer of water is also recommended. Weak plants should not be allowed to flower, and specimens of moderate strength should be permitted to develop a few flowers only. Even in the case of healthy and well-rooted examples, the spikes should be cut a short time after the last bloom has fully expanded, or the plant may become exhausted. At the present time the roots must not be over-watered,

nor the atmosphere heavily charged with moisture. A little air may be admitted through the top ventilators in favourable weather, but cold draughts must be prevented. If the requisite temperature of 60° to 65° can be maintained through the night without the use of much fire-heat, one or two of the top ventilators may be left open at night to allow superfluous moisture to escape. Shade may still be necessary for a few hours during the middle of the day if the sun is bright, but it should be dispensed with at the earliest opportunity. Much will depend on the district and situation of the house so far as shading is concerned.

Laelia purpurata.—This fine old plant is developing roots from the base of the new growth, and, where necessary, the work of repotting may be done. In a general collection of *Laelias* and *Cattleyas*, with their host of hybrids, a few plants are sure to need repotting throughout the season. Seedlings in various stages of development also need attention; some, no doubt, are on the point of flowering, but others that show no sign of blooming in the immediate future may be given fresh rooting material, if it is needed. For a few weeks after potting they will require extra careful watering, and when the sun is bright a little shade will be necessary during the middle of the day. Scale insects must be destroyed; if found to be present sponge the plants with a weak insecticide.

Coelogyne cristata.—Plants of this species, with its several varieties, are approaching the end of their season's growth, and, when the pseudo-bulbs are fully matured, only sufficient water need be given to keep the plants healthy. Arrange them in a light position at the cooler end of the *Cattleya* division. When cultivated under cool conditions, the plants will probably continue to grow for another three or four weeks, and must be treated accordingly. Other *Coelogyne*s that have completed their growth should not be watered excessively, or the roots will decay.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Successional Peach Houses.—Trees in these houses that have been thinned of the old fruiting wood should, where the buds are well advanced, be kept well watered at the roots, until the foliage drops naturally. Although in many establishments there is no choice, whenever possible avoid wintering plants in these houses, as watering the pot plants causes the buds of the trees to continue active when they should be at rest, a condition conducive to bud dropping, the development of weak flowers and other causes of failure in the spring.

Pot Strawberries.—The weather of late has been favourable to the ripening of the crowns. The plants are still making growth and this necessitates keeping those of the early batch fully exposed to sun and air. Plants with hard, red single crowns should be selected and given more room prior to early forcing, as such plants are the most likely to respond to gentle heat when required. The general stock of plants should be moved occasionally and given more room. Nothing will be gained by feeding after this date, but by disbudbing and the removal of weeds and runners the ripening of the crowns will be facilitated.

Melons.—The weather during September has been favourable to the swelling and ripening of late Melon fruits, and where careful attention has been paid to cultural details the flavour should be good. Supply more bottom heat to the roots from the time the fruits finish swelling until they begin to change colour. Later plants should be fairly well fed until the fruits have attained full size, when clear water only should be given, and this only in moderate quantity. Direct syringing must be discontinued, as moisture from dampening the surface of beds and floors will be ample. Under this treatment the fruits will not exceed the normal size, but they will be sound and deep in the flesh. An

overfed Melon is never good at any season and two small fruits are more acceptable than a very large one at this season of the year. A moderate supply of air should be admitted early on fine mornings and gradually increased as the temperature rises, when a gentle warmth in the top and bottom heat pipes will expel superfluous moisture. Where brown scale or mealy bug have been troublesome, a warm, dry atmosphere favours their spread, and every effort should now be made to check these pests. Vigorous attacks should be made with a fairly strong insecticide until such time as the house is ready for the winter cleansing. When pot trees are infested they may be taken out-of-doors, laid on their sides to prevent the wash from draining down into the pots, and well syringed with some approved insecticide at short intervals.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Filberts.—Nuts may be gathered for immediate use when the husks become brown, but for keeping they should remain until they are ready to drop from the tree, and then gathered when perfectly dry and stored in a room free from mice.

Walnuts.—When perfectly ripe the husk will open, and at this time it is usual to gather and store Walnuts. The nuts should be spread out in thin layers in a dry, airy place, and turned frequently till they easily part from the husk. After they have been dried, the Walnuts may be stored in sand and kept in a cool place.

Strawberries.—Strawberry runners that were planted early are making good progress. Remove all other runners, and afford the plants every opportunity of building up strong crowns: use the hoe frequently on all new beds to destroy weeds.

Wall Trees.—All vacancies on the fruit wall should be furnished with young, healthy trees. If the soil is in an exhausted condition, it would be wise to remove it, and substitute fresh, turfy loam of good quality. Should the soil be of a clayey nature very little, or no, manure should be added; rather add old mortar rubble and burnt garden refuse. Sandy or gravelly ground resting on a porous subsoil, may, however, be enriched by adding well-rotted manure. In planting fruit trees on heavy, strong soil, I have found it advisable to make a slight mound to ensure the roots being above the general soil level. On the contrary, where the soil is of a porous nature, it is better to plant in a slight depression. Fruit trees growing in poor, hungry soils require liberal treatment to enable them to make even moderate growth. Farm-yard manure in a liquid form should be given the roots on frequent occasions, failing this a concentrated fertiliser should be used at intervals. Where sufficient wall space is at command it is a good plan to set apart a portion for producing good trained trees for filling vacancies on the other walls, as old trees fail. Trees grown in this manner and lifted carefully with good balls of earth will soon furnish the wall again with healthy fruiting specimens. This applies chiefly to Peaches, Nectarines, Plums, and Gages, which are best lifted and replanted after two or three seasons' growth to check grossness, and bring the trees into bearing.

THE FLOWER GARDEN.

By SIDNEY LEOG, Gardener to the Dowager Lady NUNSTONHOLME, Warter Priory, Yorkshire.

Lilium.—The *Nankeen Lily* (*L. testaceum*) and other early-flowering varieties may be planted now. Deep, free loam is suitable, and the addition of peat is helpful in the production of fine flower spikes. The bulbs, which should be planted from 4 to 6 inches deep, are best surrounded with a layer of coarse sand. Pheasants do serious damage to Lily bulbs during the winter, especially to the several varieties of *L. davuricum*; therefore, protective measures may

be necessary. Amongst species useful for general planting are: *L. croceum*, *L. elegans*, *L. Hansii* and *L. chalcidionum*.

The Rock Garden.—Cranes-bill and many other subjects may be cut down and this work is more easily accomplished now than at a later date. Where *Helianthemum* grow freely, the extreme undergrowth may be cleared away, as this will prevent damping and tend to keep the plants in a vigorous condition. If planting is contemplated, prepare suitable soil for the different species and push ahead with the work while the soil is still warm. Defer the planting of varieties of *Cistus* and young stocks of tender plants until spring. Top-dressing requires to be done with care at this season; do not put heavy dressings of compost around the crowns of low-lying plants. Press the soil evenly with the fingers, leaving no holes in which water will gather during winter. Do not reduce grey foliaged plants such as *Santolinas*, as they provide colour in winter, but drastic curtailment of *Cerastium tomentosum* is necessary to keep it within bounds. Bulbs, prostrate plants and flowering shrubs may be planted in suitable stations, taking special care not to overcrowd shrubby species. Hardy *Primulas* are delightful subjects for the rock garden and should be planted boldly if space permits.

Transplanting Evergreens.—Many evergreen trees and shrubs may be planted. Should the soil be dry, afford water to the roots of specimens a few days before they are to be lifted. The site for planting should be previously prepared to obviate delay between lifting and planting. Cut back broken and bruised roots with a sharp knife, making the cut in an upward direction, and spread the roots horizontally as planting proceeds. In open positions supports will be necessary to prevent swaying caused by wind; for this purpose, place three stakes around each specimen and secure it with soft rope from each point. In cold, exposed districts the planting of evergreen subjects—especially Yews—is best deferred until early spring. The curtailment of branches of large specimens of Laurels should receive attention at the time of transplanting.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Cauliflowers.—Autumn-sown seedlings should be pricked off as they become large enough. Where they are to occupy temporary frames throughout the winter, they should be placed three to four inches apart on a prepared bed. If a cold Peach-case or similar position is available for wintering them, pot them singly into 4 inch pots. Whilst the weather keeps open these Cauliflowers should be fully exposed except to heavy rains, and, later, ventilation should be freely given; but during very cold weather the lights must be kept closed at night and protected with mats. Excessive moisture should be guarded against and a sharp look-out kept for slugs, as they are partial to the plants at this stage of their growth.

Celery.—The latest rows should now be ready to receive their first earthing, and the procedure as advised in a recent calendar should be followed. If necessary, see that roots are well supplied with water before earthing-up is commenced.

Potatos.—Where not already done, the lifting of late Potatos should be completed. If, through lack of storage accommodation, they have to be clamped, careful inspection for diseased tubers should be made, or they will cause wholesale destruction.

Tomatos.—The past season has not been favourable to the outside culture of Tomatos. Any fruit approaching ripeness should be gathered and placed in the fruit room. Plants containing trusses of unripe fruit should now be cut off at the base, and, after removing the foliage, hung on overhead wires in a greenhouse. In this position the fruits will ripen gradually and prolong the supply.

INTENSIVE CULTIVATION.*

(Continued from p. 159.)

FIFTY years ago, as Mr. Robbins has mentioned in his paper on "Intensive Cultivation" (*Journal of Board of Agriculture*, xxv., 1919), the Tomato was all but unused as a food. To-day one district alone, the Lea Valley, produces 30,000 tons per annum. The total production in this country amounts to upwards of 45,000 tons. Yet the demand for Tomatos has increased so rapidly—the appetite growing by what it feeds upon—that the imports in 1915 from the Channel Islands, Holland, France, Portugal, Spain, Canary Islands and Italy amounted to nearly double the home crop, viz. 80,000 tons, making the total annual consumption not less than $1\frac{1}{4}$ ton, or about 2 pounds per week per head of population. It is too fanciful to discern in this rapidly growing increase in the consumption of such accessory foodstuffs as jam and Tomatos, not merely an indication of a general rise in the standard of living and a desire on the part of the community as a whole to share in the luxuries of the rich, but also a sign that in a practical, instinctive, unconscious way the public has discovered simultaneously with the physiologists that a monotonous diet means malnutrition, and that even in a dietetic sense man cannot live by bread alone? As lending support to this fancy and as indicating that the value of vitamins was discovered by people before vitamins were discovered by physiologists, I may mention the curious fact that the general public has always shown a wise greediness for an accessory food which, though relatively poor in calories is rich in vitamins—namely the Onion. Even in pre-war times the annual value of imported Onions amounted to well over one million pounds sterling; and, when the poverty of the winter diet of the people of England and Wales is considered, it must be admitted that this expenditure represented a sound investment on the part of the British public.

If, as I think, the increasing consumption of the accessory foods which intensive cultivation provides represents not merely a craving for luxuries, but an instinctive demand for the so-called accessory food bodies which are essential to health, then it may be expected that, as has been illustrated in the case of jam and Potatos, consumption will continue to increase. If this be so, the demand both for fresh fruit and also for "primeurs"—early vegetables—should grow and should be supplied at least in part by the intensive cultivators of this country.

If the home producer can place his wares on the market at a price that can compete with imported produce—and it is not improbable that he will be able to do so—he need not, even with increased production, apprehend more loss from lack of demand than he has had to face in the past. Seasonal and other occasional gluts lie must, of course, expect.

Even when judged by pre-war values, his market, as indicated by imports, is a capacious one. Thus in 1913 the imports into the United Kingdom of soil products from small-holdings were of the value of about 50 million pounds sterling. To-day it is safe to compute them at over 100 millions. To that sum—of 50 millions—imported vegetables contributed 5½ million pounds sterling, Apples 2½ millions, other fruits nearly 3 millions, eggs and poultry over 10 millions, rabbits and rabbit-skins a million and a half and bacon and pork over 22 millions. No one whose enthusiasm did not altogether outrun both his discretion and knowledge would suggest that the home producer could supply the whole or even the greater part of these commodities. But, on the other hand, few of those who have knowledge of the skill and resources of our intensive cultivators, and of the suitability of favoured parts of this country for intensive cultivation, will doubt but that a modest proportion, say, for example, one-fifth, might

be produced at home. This on a post-war basis would amount in value to over 20 million pounds, would require the use of several hundred thousand acres of land, and provide employment for something like 100,000 men. The fact that Kent has found it profitable to bring one-fifth of its total arable land under fruit and other forms of intensive cultivation is significant and a further indication that intensive cultivation offers real prospects to the skilful and industrious husbandman. The present reduced acreage under fruit, due partly to war conditions, but mainly to the grubbing of old orchards, enhances the prospects of success.

The estimated acreage under fruit in England and Wales is:—

	Acres.
Apples	170,000
Pears	10,000
Plums	17,000
Cherries	10,000
Strawberries	13,000
Raspberries	6,000
Currants and Gooseberries	22,000
	248,000

exclusive of mixed orchards and plantations.

These figures are, however, well-nigh useless as indicating the areas devoted to the intensive cultivation of fruit for direct consumption. Of the 170,000 acres of Apples, either fruit probably occupies not less than 100,000, and of this area much ground is lumbered with old and neglected trees. Of the 10,000 acres in Pears some 8,000 are devoted to perry production, and hence lie outside our immediate preoccupation. Having regard, however, to the reduction of the acreage under fruit, to the increasing consumption of fruit and jam, and to the success which has attended intelligent planting in the past, it may be concluded that a good many thousands of acres of fruit might be planted in this country with good prospects of success.

Lastly, it remains to consider what results are likely to occur if intensive cultivation comes to be more generally practised in this country. I am indebted to one of our leading growers for an example of the results which have attended the conversion of an ordinary farm into an intensively cultivated holding.

The farm—of 150 acres and nearly all arable—was taken over in 1831. At that date it found regular employment for three men and a boy—with the usual extra help at harvest. The rate of wages paid to the farm hand was 15s. a week.

In 1885, two years after the farm had been taken over and converted to the uses of a horticultural holding, from 20 to 25 men and £0 to 100 women, according to season, were at work on it, and the minimum wage for men was 2s. per week. The holding was increased gradually to 310 acres, and at the present time gives employment on an average to 50 men and 50 women during the winter months and 110 men and 200 women during the summer months. In 1915 the wages bill was £7,981, and in 1918 £10,000 per annum, that is, over £34 per acre.

Another concrete example of the effect of intensity of cultivation on density of population is provided by the comparison of two not far distant districts—Rutland and the Isle of Ely. The rich soil and industrious temperament of the inhabitants of the Isle have justly brought it prosperity and fame. The Isle of Ely comprises 276,961 acres, of which number 170,395 are arable; Rutland 97,087 acres with 35,000 arable. The land of Rutland is occupied by 475 persons, that of the Isle by 2,002; the average acreage per occupier in Rutland is 206, in the Isle 118. The total number of agricultural workers in Rutland is 2,146, and in the Isle 13,582. The density of agricultural population in terms of total acreage is in Rutland 2.5 per 100 acres, and in the Isle 5.6, or 20 more cultivators to the square mile in the Isle of Ely than in Rutland; from which the curious may estimate the possibility of home colonisation by introducing as a supplement to extensive agriculture such an amount of intensive cultivation as may be practised in districts similar in climate and soil to the Isle.

(To be concluded.)

* Presidential address by Professor Frederick Keeble, C.B.E., Sc.D., F.R.S., to the Agricultural Section, British Association for the Advancement of Science, Cardiff, 1920.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

NO. 22.—AUTUMN FLOWERS.

THIS season has produced no mitigation of deluges throughout September and October, though the cessation of the rains was to be expected daily. On the contrary, the world continued wrapped in an obstinate wet, white cotton-wool of cloud; which makes me all the more wonder how the Peaches up here contrive to ripen. Yet ripen they do, in prodigious crops, at the end of September; but without ever having had any sort of approach to summer to ripen their wood, or any sunshine to mature their fruit. All the same, they are of delicious flavour, these sturdy little Chinese Peaches, that are produced here so happily among the clouds, on standard trees, completely neglected and untrimmed from year to year. And I am accordingly in great hope that they will do as much for us at home; for, even if their fruits never reach exhibition proportions, a completely weather-proof standard Peach ought to be of value, if only for its flower, which in too many of our cultivated sorts depends on a summer ripening such as is undreamt of by their cousins at Hpimaw. Indeed, I would add, for the encouragement of growers, that this lack, here, of any ripening summer is of the happiest augury for any plant of these parts, from 8,000 feet upwards, for many species that endure a long, cold, bitter winter are hopeless for English gardens, owing to the compensating blazing summer that they enjoy at home, and miss with us; whereas here, the bitter, cold length of the winter is made good by no such thing, and the summer is even damper and darker than in England, so that no ripening of the wood is possible. And, in this context, I am especially hopeful for a particularly beautiful *Camellia* (or apparent *Camellia*) of these parts, which develops into a most stately, grey-boled forest tree of 60-80 feet, and produces, even in its young stages, a profusion of very large, white flowers in April, and then again, an even handsomer profusion in October, so that the whole tree seen from afar is covered with white freckles, making it a conspicuous object amid the leathern gloom of the forest at 8,300 feet.

The alpine, here, die off very early, and by October are dead. The chief contribution to the autumnal flora throughout the region, though, is made by the *Gentians*; and of these the most illuminating is a beauty that adorns the highest tops and alps at 13,000 feet, when everything else has been stricken sere and brown by the frosts of October. Indeed, I should call this *Gentian* the loveliest I have seen, had I not previously set eyes on *G. Farreri*. The new plant stands, as a matter of fact, very close to *G.*

Farreri, in that group of late-bloomers which early collectors were always trying to call *G. ornata*. It has the same habit, the same tuft of next year's stolens arising in the midst of this year's expanded flowering ones; the same trumpet flowers of the same furious, light sky-blue. It is smaller, though, in all ways (though not by very much), the exterior of the trumpet is differently marked, and the flowers have, unlike those of *G. Farreri*, all the usual sensitiveness about weather, making preparations to shut up with every five-minutes' cloud that crosses the sun. As for seed, I am entirely unable to understand how these *Gentians* develop any, seeing that they only bloom when the ground is nightly white with frost, and almost all insect life is over at those altitudes. At least, though I ransacked the high alpine turf, the grassy rocks, the coarse, marshy, sedgy lawns in which this *Gentian* loves to lurk, I never could come on any promise of a pod; while it is matter of history on what an unthought-of fluke depended the introduction of *G. Farreri*, not from seed off the plants I saw, but from seed entirely unknown and unsuspected of the previous year's collecting, brought in by a Chinese, and noted, indeed, as a *Gentian*, but as one of whose merits no notion could be formed.

The other late-flowering *Gentians* of the region are lowlanders, except for one that produces clusters of sapphire-blue blossoms on decumbent stems, here and there in the alpine glades. Similar in habit, but with larger flowers of bright amethyst-purple; this species is very common all over the grassy slopes of the valleys and very attractive, with its large, wide heads of blossom in November, shining among the russet deadness of the Bracken. Purple, indeed, is a very fashionable habit among these *Gentians*, and almost equally fashionable is a climbing habit. The earliest of these climbers is a plant of the Middle Region, up to 10,000 feet. It is also the least brilliant in bloom, producing long-tubed stars of a lymphatic lilac, passing to a dull shade of white. These, however, are redeemed by the fruits, which are so unlike those of all other *Gentians* in my experience that perhaps the divergence is specific, for this plant produces fleshy, scarlet pods, like little Bologna sausages, encased in the central hollow of which is the seed. More striking is the next species, which ramps about in the valley-regions among grass and Bracken, where for a long time I considered that I had missed its flower, and only happened on its seed, for, long before the flower-bud is even developed, the calyx and capsule are large and conspicuous, with every look of approaching maturity. On the flat, five-lobed disk, though, a very minute point may easily escape notice. But this, towards the middle of October, enlarges rapidly, and unfolds into a beautiful, swollen-belled flower of soft purple, lined with a lighter shade.

Lower still, down in the valleys, and presumably hopeless for out-door culture in England, lives yet another twiner, of even greater attractions—a very frail grower, with very large chalice of a soft, warm amethyst throughout. But, luckily, the most generally lovely of all this lot is an alpine, never found under 10,500 feet, and ascending to 11,000 feet. This is a voluminous trailer, covering low bushes in swathes of twining shoots, that in September are literally hidden from view by the profusion of long, pale-purple bells, inflated at the middle, and striped and panelled with pollen on a main ground of purple. It is not at all a common

plant, nor one of any prodigality in seed: but if this can be raised, English gardens ought to have no great difficulty in enjoying this *Gentian*.

Otherwise the whole country has little to offer in the floral line after the end of August. A fat-headed, yellow *Tansy* sits stolidly (and very rarely) on the high-alps; hedgerows are hung with insignificant little bells of a dull purple by a *Clematis*; but there is little that calls out a collector's ardour or a gardener's longing, if I except a certain *Aster*, and a certain climber like a smaller, more refined *Pueraria*, that plays at being a diminished, bright-purple *Wistaria* over many of the coppice-bushes up at 8,000 feet in September. This is rarely attractive, while even more so is the *Aster* (or *Galatella*?)—an alpine, very rare here, but not uncommon in cool, open gullies of the Chimili forests at 9,500 feet, where it is really beautiful, with graceful bending sprays of two feet, set, in the upper axils and at the end, with elegantly arranged heads of well-built, solid, round, flowers of a clear bright lilac, without any of that indeterminateness of colouring, raggedness of outline, or gracelessness of habit, that mars so many of the Michaelmas Daisies. And here ends the tale of autumn blossoms, but that mention must be made of a charming little *Cirrhoptetalum*, whose maroon-crimson blooms adorn slender tree-branches at 8-9,000 feet in September, so that it ought assuredly to do just the same for us, in similar positions, at home. *Reginald Farrer*.

THE NAMES OF CONIFERS.

(Concluded from p. 156.)

THE name Lebanon is derived from the Semitic *laban*, whitish, and refers to the limestone cliffs which are characteristic of the whole range. The idea of this range getting its name from the white resin of the Conifers upon it, suggested on p. 182, is fantastic.

Mr. Rogers has written three pages, 124-126, on the Hemlock Spruce, without explaining how this tree got its name, though at the beginning of his remarks he probably had this intention. The Oxford Dictionary clears up the subject as follows: "Hemlock Spruce or Hemlock Fir, so-called from the resemblance of its branches in tenuity and position to the leaves of the common Hemlock." In short, the fineness of the foliage suggested the name of Hemlock. Here, again, I venture to suggest that the word "Fir" or "Spruce" be dropped in connection with this tree, which is known in America as the Hemlock Tree simply. A name consecrated by Longfellow is good enough for our use:—

"The murmuring Pines and the Hemlocks
Bearded with moss and in garments green."

The Hemlock Tree is just as distinct from the Spruce and the Fir as it is from the Larch and the Pine, and now constitutes, under the name of *Tsuga*, an elegant genus with ten known species. This genus has no immediate affinity with the Douglas Fir; and the Latin name of the latter, *Pseudotsuga*, which must be preserved for reasons that need not here be entered into, is no justification for the horrible name, "False Hemlocks," which appears in some American books. We must congratulate Mr. Rogers on having avoided this pitfall; but he ought to rate his proof-reader for heading the pages devoted to the Larches (pp. 134, 136, 138, 140, 142, 144, 146) with the title "*Tsuga*, or Hemlock Spruce Firs."

The dispute about the application of the name *Abies* to Silver Firs, and *Picea* to Spruce, and vice versa, has been settled for many years, but is revived on pp. 106-107, where it is humorously considered to be a contest between Pliny and Virgil. Needless to say, there was no dispute in their time.

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, April 24, May 29, July 10, July 31, and September 4.

The best discussion on the question is that given by Schouw, in *Ann. Nat. Hist.*, iii., 256-261 (1845). He shows conclusively that Pliny, Virgil and Vitruvius, all called the Silver Fir, *Abies* and the Spruce, *Picea*.

Some minor faults may now be corrected for the benefit of students. It is evident on pp. 159, 175, that it is the scales of the cones and not the cones themselves that are peltate. *Cupressus torulosa* is not "so-called presumably from the presence of glands upon the leaves" (p. 165), but from the elegant appearance of the ultimate branchlets, *i.e.*, cylindrical with slight swellings at intervals,

reference to the Key (p. 264) disclosed that the real difference between the *Cembra* and *Strobus* Pines had escaped notice and was not stated. These agree in most characters, but differ in the seeds, which are small and winged in the *Strobus* group, and are large and wingless in the *Cembra* group. This important distinction is co-related with their distribution, the *Cembra* Pines being alpine trees, which are dependent for the dissemination of their seeds on certain rodents and birds, that in carrying off the seeds to store and eat, drop one here and there, thus effectually sowing them. The adaptations of the cones

phylloid is really a "leaf-like appendage to the stems of algae," whereas it is *phylloide*, a petiole taking on the form of a leaf, that is intended. An *aril*, p. 307, is not necessarily glutinous, it may be membranous.

To sum up, this book, in spite of the criticisms which have been necessary, may be recommended as an attempt, made with great zeal, to render easy to outsiders, the identification of all ordinary Conifers in cultivation in these islands. It has many merits, and on the whole is accurate, when it sticks to the subject. The digressions will help to lighten the work for many readers. *A. Henry.*



FIG. 74.—BRASSO-LAELIO-CATTELEYA AMBER.
(R.H.S., First-Class Certificate, September 21, 1920. See p. 161.)

somewhat like a tight string of beads. *La Mortola*, p. 193, is in Italy, and not in Southern France. The words coffin and coffre are not derived, as stated on p. 156, from the Cypress, but come from the Latin *cophinus*, Greek *kophinos*, a basket. *Cupressus goveniana* has no "unpardonable brevity of life in English climates" (p. 169). Many old and thriving trees are known in the British Isles. Royama, on p. 112, should read Koyama. *Pinus resinosa*, p. 59, is not a S. American tree; it is a native of Canada and of the northern border of the United States. *Abies Pinsapo*, the Silver Fir of the South of Spain, does not derive its name from a region in Spain, as stated on p. 71. This name is a contraction of *pino-sapino*, the first syllable indicating "Pine" and the second syllable "Silver Fir" in Spanish.

The complaint that *Pinus Armandi* is relegated to the *Cembra* section of *Pinus* (p. 20) seemed somewhat astonishing, until a

and seeds to this purpose is extraordinarily clever, if one may use the expression. The *Strobus* Pines occupy lower levels and much more favourable soils, and depend for the scattering of their seed on the wind, an ineffective means in comparison with the other method. *Pinus Armandi* is, of course, a typical *Cembra* Pine, and was discovered by Père Armand David in the mountains of Shensi, in China, in January, 1873, and not in 1895, as stated on p. 19.

It is usual for writers to quote the names of periodicals as exactly as possible, for the convenience of their readers. Some of these will certainly use strong language on finding that the *Arbicultural Journal*, on p. 141, is *Quarterly Journal of Forestry*, while the same name on p. 142, refers to a different publication. *Journ. R. Scott. Arb. Society*, xxi., 121-130 (1908).

A glossary is attached to the volume, which requires some care in using, as *e.g.*, p. 315;

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTELEYA SARGON.

A GRAND flower of this cross between *L. C. lustre* (*C. Luddemanniana* × *L. C. callistoglossa*) and *C. Hardyana* (*Downiana aurea* × *Warszewiczii*) received from Messrs. Stuart, Low and Co., Jarvisbrook, Sussex, shows it to be one of the very finest of the *Laelio-Cattleyas*, retaining in a marked degree the large-flowered *Cattleya* form, and distinct traces of the *C. Luddemanniana* in *L. C. lustre* in its broad petals and lip. The flower, which is over eight inches across, has light lilac coloured sepals and petals and silver-white veining, the broad front of the lip being ruby-purple, darker towards the centre, to which radiate gold lines from the base.

The cross was raised at Westonbirt, where it first flowered, and was named in 1915.

APPLE PACKING.*

THE necessity for very careful grading and packing of fruit, particularly Apples, is continually being emphasised by all sections of the fruit trade, including growers. Notwithstanding the fact that growers are fully aware of this need, and although propaganda work continues unceasingly year after year, little progress is made.

One of the best means of impressing backward growers of the necessity for good packing is



FIG. 75.—BADLY FILLED BARREL OF APPLES.

through commercial fruit shows, such as those held at Milstone, Cambridge, Cheltenham, Gloucester and Pershore. These exhibitions of Apples packed on the best commercial lines enable growers to compare their fruit, and the way it is packed, with their neighbours'. Competitions of this description are invaluable as a means of introducing and emphasising improved methods, and of inducing their permanent adoption.

It is regrettable that few growers are able to attend regularly the large distributing markets



FIG. 76.—WELL FILLED BUT LOOSELY PACKED BARREL OF APPLES.

such as London, Birmingham, Manchester, Newcastle and Glasgow, and see the condition of their fruit on arrival, compare it with that of their competitors at home and abroad, and become convinced of the increased returns obtained from fruit which has been well packed and attractively marketed compared with equally

good samples of fruit which are, however, bruised and badly put up. Were this possible a great improvement would almost certainly soon take place, but failing this, the Commercial Fruit Show provides the best method of convincing growers.

In order to illustrate the common faults met with in Apple packing, and to suggest and urge how these may be overcome, the photographs reproduced with this note were taken at the Cambridge Commercial Fruit Show of 1919 at the suggestion of the Ministry of Agriculture. The variation in the quality of the packing at this show was astounding. These photographs do not in any way exaggerate this regrettable lack of uniformity.

No matter what package is used, there is a right and wrong method of packing, and the following essential points must be strictly adhered to if the produce is to look attractive when it arrives at the wholesale market:—

1. Honest grading, both as to size and quality—no "topping."
2. Full packages and firm packing.—The fruits should be packed so that each is held in position by its neighbours. Only in this way can the package be filled and bruising of the fruit reduced to a minimum.
3. The minimum use of packing material required to prevent bruising those Apples which touch the side of the package.

Not only does strict adherence to these essentials ensure the fruit arriving at the market in an attractive condition, but, equally important, an impression is soon made on the buyers and their confidence is obtained. Filling the packages completely is most important in this connection. Growers who do not attend the markets and see their produce sold never realise the importance of gaining the complete confidence of the final wholesale purchaser of their produce. They do not appraise the value to themselves of this sense of security to the purchaser in terms of pounds, shillings and pence.

The time a retail buyer is able to spend in the market purchasing his supplies is, of necessity, very limited, and if a large quantity of fruit has to be purchased extra time cannot be wasted in estimating carefully the proportion of sound and unsound, or large and small fruit in an ungraded sample. If the retail buyer must buy ungraded and badly-packed fruit he only gives a price which, from his point of view, is safe to produce a profit after allowing for waste. Such a price is always a poor one to the grower. On the other hand, fruit well packed and graded soon gets a name for the grower. The buyer knows that he can rely on the sample and can buy without undue risk, even on the consignment note. Further, competition amongst buyers is promoted and the salesman, by taking advantage of this, is able to return an enhanced price.

Attention is called to the following points brought out in the illustrations:—

Barrel Packing.—In Fig. 75 the fruits have been poured into the barrel, which has not even been filled. The packing materials consist of a little crumpled paper and straw. (The straw is quite unnecessary up the side of a barrel; it is only required for the head and tail.) Although this particular package had only travelled a short distance to the show, much of the fruit had already been damaged by bruising. What value would such a sample have on the open market? The fruit is bruised, the package only three parts full. If the grower and his packer could hear the remarks passed by retail buyers on a sample of this description they would never pack like it again.

The barrel in Fig. 76 has a better appearance than that shown in Fig. 75 and is full. The fruits, however, are not packed tightly and are bound to bruise as they are rattled about by the rail and market porters. Besides, the appearance would have been greatly improved by an ample lining of white paper.

Fig. 77 shows a well-packed barrel. Nothing could look better. It is full. The fruits hold each other tightly together and cannot bruise. The grading is good. The Apples look attractive as they are packed on their cheek and not eye up; they are shown off by means of ample white paper.

Bushel Packing (Fig. 78).—The principles underlying packing in bushels are very similar to those for barrels, but Fig. 78 illustrates how easily a good pack can be spoilt. The hay has been used to counteract slack packing, but its use completely destroys the appearance of the sample, and down goes the market value in consequence.

Box Packing.—Unfortunately, the cost of non-returnable Apple boxes at the present time restricts this system of packing to high-quality samples. Nevertheless, as an



FIG. 77.—WELL FILLED AND PROPERLY PACKED BARREL OF APPLES.

effective means of displaying the fruit, and of giving the buyer the full quantity of fruit to which he is entitled, this form of package is admirable. No doubt, when timber becomes cheaper, this package will again come to the fore.

Success in box packing depends very largely on perfect grading and tight packing—to obtain the latter the minimum of packing materials (wood wool and paper) should be used.

Fig. 79 shows a box of Lord Derby packed properly.

Fig. 80 shows some fine Allington Pippins, but



FIG. 78.—A COMMON METHOD OF PACKING APPLES IN BUSHEL BASKETS.

the box is only half full owing to the amount of paper which has been used. If the Apples are very choice, it is sufficient for the box to be packed on exactly the same principle as shown in Fig. 79, but with each Apple wrapped in absorbent tissue paper.

Fig. 81 shows inferior packing, which is slack, and with the lining paper used carelessly.

* Reproduced by permission from *The Journal of The Ministry of Agriculture*.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 155.)

KENT.—The Apple crop is the smallest for 50 years and not more than 5 per cent. of an average yield. We have no fruits of Cox's Orange Pippin on 25 trees; on Lane's Prince Albert or Wellington, and very few Peasgood's Non-such. The following sorts are exceptions:—Worcester Pearmain (full crop), James Grieve (full crop), Golden Noble (full crop), Smart's Prince Arthur (fair), Blenheim Pippin (medium), Beauty of Kent (medium). The exceptionally warm February and March stimulated growth. Severe weather with sharp night frosts up to early in June destroyed the early produced blooms. Many trees blossomed freely, but with poor blooms, and all the flowers dropped off.—*Charles E. Shea, The Elms, Foot's Cray.*

—The fruit crops are very patchy. Apples are, in some gardens, a fair crop, in others there is none. The same is true of Plums. Pears in general are a fair crop. Cherries were very scarce, but Peaches and Apricots grown out of doors were satisfactory. Small fruits were good, save Strawberries. The unfavourable fruit crops in general are doubtless due to the early flowering of most fruit trees and injury to the blossom by late frost. The soil in this district is chalky.—*J. H. Shann, Betteshanger Park Gardens, Eastry.*

—Generally speaking, it is a most disappointing season for fruit. Strawberries rarely looked more promising, but owing to the unusually small rainfall in winter and spring, the plants were already suffering from drought at the beginning of the season, but subsequently rain fell and saved the remainder of the crop. Plum trees of all kinds bloomed profusely, but a spell of dull and damp weather destroyed a large proportion of the bloom, and even where the flowers appeared to set the immature fruit dropped later. The same applies to Cherries, which were a complete failure. Where Apple

some varieties set fairly well and the fruits seemed to be swelling satisfactorily until they attained a fair size, but since then they have dropped freely. Peaches, Cherries, Strawberries and Raspberries were very satisfactory. Plums are a very thin crop; many of the fruits dropped when stoning. Gooseberries were excellent.—*Herbert Markham, Wrotham Park Gardens, Barnet.*



FIG. 80.—A BADLY-FILLED BOX OF ALLINGTON PIPPIN APPLES. (see p. 170).

—Following a mild winter, the brilliant weather in early spring brought all fruit trees into flower about a month earlier than usual. A period of wet, cold weather followed, with the result that Pears and Apples set very badly; also Plums in the open. Strawberries did not flower well, and of the berries which set half rotted owing to heavy rains; many Raspberries were also spoiled by rains, whilst Gooseberries split badly from excessive moisture. Amongst a number of large trees in the open Jargonelle Pear, King of the Pippins, and Cellini Apples, and a Gage Plum which has not fruited for years, are carrying good crops. Espalier trained Apple trees of Lord Suffield, Chas. Ross, and James Grieve, also a Durendeu Pear have good crops. On walls the crops of Plums and Cherries were very good, but Marguerite Marillat is the only Pear with an average yield. The trees were laden with blossom.—*G. H. Head, Fulwell Park Gardens, Twickenham.*

SURREY.—There is a fair crop of Cox's Orange Pippin Apple, chiefly on bush trees, and the growth is good, but traces of canker may be seen on some of the trees. Sturmer Pippin has rather a thin crop. Trees of Lane's Prince Albert, Warner's King, and Newton Wonder are carrying heavy crops, also trees of the Codlin types. Pears are rather poor, and not of vigorous growth. Plums, Early Rivers, Victoria, and Jefferson had rather thin crops, but the fruit was of good quality. Damsons are very poor, and the trees have suffered very much damage from green fly. Langley Bullace is carrying good and clean fruit. These gardens are 650 feet above sea level; the soil is a thin sandy loam, resting on sandstone, and is of poor quality in places.—*T. W. Birkinshaw, Coverwood Gardens, Ewhurst, Guildford.*

—In this district Apples are almost a complete failure. The trees bloomed profusely, but the flowers were ruined by cold rains and frost during April. The Plum crop also suffered greatly from the same cause. Pears are a better crop. We have a good yield on wall trees. The soil is chalky; in some other parts of the district it is rather sandy, with a red clay subsoil.—*J. Collier, Gatton Park Gardens, Brigate.*

—Apples, which promised well when the trees were in bloom are very few, owing to incessant rain and lack of sunshine. Pears set fairly well with the exception of a few varieties. Bush fruit has been a good crop. Strawberries set freely, but it was a short season; the heavy rains spoiling the later fruit. The soil in this district is of a light sandy nature. *Jas. Lock, Oatlands Lodge Gardens, Weybridge.*

—The fruit crops are very irregular. Apples are the greatest failure, although a few varieties are carrying heavy crops on bush trees, notably James Grieve, Worcester Pearmain, Charles Ross, Bismarck, and the early Keswick Codlin. Most varieties of Pears are fruiting, but very lightly. Plums are a good average crop, and all trees are clean, and the fruit of good quality. Early Strawberries suffered much from drought, and late varieties from heavy rains and violent storms. Black and Red Currants, Gooseberries, and Raspberries carried heavy crops of fine fruit. Our soil is heavy, resting on clay.—*P. Jordan, Ford Manor Gardens, Lingfield.*

—We never had finer prospects of a great fruit crop, but in the lower part of the gardens we have practically no fruit. On the higher parts we have good crops, Apples especially being very fine.—*N. T. Wright, Royal Horticultural Society's Gardens, Wisley, Ripley.*

SUSSEX.—There could not have been a better promise of all kinds of fruit until April 13, when we had the worst gale I have ever witnessed, lasting day and night until the 17th, destroying not only fruit bloom and foliage, but forest trees as well. The soil is a heavy loam on chalk.—*H. Cook, Glynde Place Gardens, Lewes.*

—A very poor fruit season, except for small fruits, Strawberries and Plums. Gooseberries were very plentiful and Black Currants over the average. Plums are just about an average crop, Monarch being the only variety with a big yield. Some trees are almost without fruit, owing to the severe attack of leaf-curling Plum Aphid. Apples are very scarce, particularly late varieties. Much of the fruit is scabby and there is a large proportion of "scrumps," or small, undeveloped specimens, due to aphid attack. Pears can hardly be found at all, and are scabby. Both Walnuts and Cobs are very



FIG. 79.—WELL-PACKED BOX OF LORD DERBY APPLES. (see p. 170.)

trees were carrying a crop, a large quantity of the fruit dropped prematurely. I have noticed isolated large Apple trees bearing heavy crops—apparently the greater movement of air around these assisted the blossom to set.—*J. E. Weston, Eastwell Park Garden, Ashford.*

MIDDLESEX.—Apples, Pears and Plums are much below the average. All fruit trees flowered well, but the weather in early spring was very wet and sunless. Notwithstanding,



FIG. 81.—INFERIOR BOX PACKING OF APPLES. (see p. 170.)

scarce. The worst pests of the season are Aphid pruni, A. malifoliae and Apple Blossom Weevil; the worst diseases: scab and brown rot. The soil is mainly a light, sandy loam; the subsoil is variable, in some places sand, in others clay, but all liable to be wet in winter.—*Ernest M. Bear, Magham Down, Hailsham.*

(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Spiraea arborea glabrata (see p. 133).—In your issue of the 11th ult., J. F. has a note drawing attention to this beautiful plant. He is, however, wrong in giving Späth, of Berlin, the credit for its introduction to our gardens. Both *S. arborea* and the var. *glabrata* (glabrous leaflets) were introduced by Mr. E. H. Wilson from China in 1907. He found it growing in Western Hupeh and W. Szechuan, and the seeds collected are his Nos. 199 and 1310. There is a bed of plants grown from these seeds near the Water-lily house at Kew, and in most of the gardens whose owners are interested in the newer Chinese introductions. A. O.

The Autumn Feeding of Fruit Trees.—I was interested in the remarks on the shortage of Apples. The theory that feeding in August will ensure a crop may be correct, and gardeners are in the habit of feeding the roots of inside fruit trees even in winter. But there is the fact that some varieties of Apples never fail to produce a crop, while soil, and sometimes climate, has so prejudicial an effect that there are varieties that must have these to suit them in order to crop at all. Age also has a determining effect, but in Pears more than Apples. R. P. Brotherston, Tynningham Gardens, Preston Kirk.

Solanum jasminoides.—At Torquay, and no doubt elsewhere on the south-west coast, *Solanum jasminoides* is now the most attractive climber on dwelling house walls. It has dark foliage and innumerable trusses of pure white flowers, both very charming against the red sandstone of which many of the houses are built. Though no doubt somewhat tender there is no difficulty in growing it on a south wall further north, provided that protection is given in winter. At Kew many years ago there was a considerable mass against a south wall which, in winter, had the protection of mats until, perhaps, the winter came, when this proved insufficient. This *Solanum* is, of course, a very good climber for the greenhouse or conservatory. R. Irwin Lynch, V.M.H.

Late Strawberries (see pp. 77 and 99).—Many readers will be glad to learn Mr. W. R. Lisle's cultural treatment of the Royal Sovereign Strawberry for late cropping. I have grown this variety for many years, but have never had good autumn fruits. Some 40 years ago the late Mr. W. Bennett, of Rangemore, Burton-on-Trent, produced some wonderful, late, second crops by planting out early forced pot plants of (I believe) Vicomtesse Hericart de Thury. I well remember him digging and re-potting some of them a second time, and finishing the crop indoors, with fire-heat, up to mid-November. I believe I am correct in saying that he gathered ripe fruit for nine months that season. John Bates, Meaford Gardens, Stone.

—I enclose a sample cluster of Strawberry fruits for your inspection. The variety is Royal Sovereign, grown on plants which were forced and first fruited on March 5, 1920. The plants were subsequently hardened and then planted in the open. A few are now bearing fruits like the sample enclosed, which were picked at random. The majority of the plants were prevented from fruiting a second time. S. J. Channing, Norton Manor Gardens, Sutton Scotney, Hants.

Gentiana asclepiadea (see p. 148).—I have had a plant of *Gentiana asclepiadea* for about 10 years, growing on an exposed bank facing north, with a gradient of 1 in 2, in cold, shaly limeless loam. I have not measured the stems in previous years, but this season they seem much as usual. There are about 50 stems, measuring little short of 3 feet. There is always abundance of bloom of a good blue, but this year the flowers were much spoilt by rain, and the seed is scanty. This is not the warmest or sunniest part of England. L. J. Rogers, Leeds.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

SEPTEMBER 21. *Present:* Messrs. E. A. Bowles (in the chair), Baker, Hales, Wilks and F. J. Chittenden (hon. sec.).

Corm of Cyclamen.—Mr. H. J. CHAPMAN sent a corm of *Cyclamen neapolitanum* to illustrate the large size these corms attain. It was planted forty years ago, had grown and flowered well ever since, and now measures eight inches in diameter.

Geronium pratense.—Rev. W. WILKS showed flowers of a lilac shade with many darker veins marked as they are in *G. striatum*. In other characters this plant appeared to resemble *G. pratense*; it was found some time since in Wensleydale.

Acidia in Cabbage.—Mr. RAINBOW sent a very perfect, funnel-shaped leaf of Red Cabbage, measuring about six inches in length and 2½ inches across the open mouth.

COMPETITIVE VEGETABLE CLASSES.

The usual autumn vegetable show was held in conjunction with the fortnightly meeting on the 21st ult.

For such a notoriously unfavourable season the general quality of the exhibits must be considered higher than might have been expected. Competition generally was very good, though one could have wished for more competitors in the several classes for collections. The judging arrangements and the judges' decisions were not all that could be desired. Their work was not finished until a late hour and then some of it had to be done over again, notably in the classes for collections of Potatoes. In class 4 it was discovered that a prize-winner had included two dishes of one variety, and as each dish was plainly labelled, no excuse for this lapse on the part of the judges was apparent.

Again, in the class for immune varieties, the judges seem to have gone hopelessly astray and were obliged to reconsider their verdict.

COMPETITIVE CLASSES.

The competition in what may be regarded as the champion class—that for 12 distinct kinds of vegetables—attracted only two exhibitors, but they staged excellent collections in the very best manner. The first prize was won by the Hon. Mrs. ROLAND GREVILLE, Poleston Lacey, Dorking (gr. Mr. H. Prince), with a magnificent collection. The varieties were Autumn Giant Cauliflower, Ailsa Craig Onion, Long Red Carrot, Solid White Celery, Prize-taker Leek, Best of All Runner Bean and Black Beet; 2nd, W. H. MYERS, Esq., Swanmore Park, Bishop Waltham (gr. Mr. G. Ellwood). His outstanding varieties were Duke of Albany Pea, Sutton's Al Runner Bean and Scarlet Horn Carrot.

The class for nine kinds also had only two exhibitors, and was intended to illustrate the size and quality of vegetables most desired for daily use; in this both exhibitors were consistently successful, for every kind was ideal in respect to moderate size, perfect shape and high quality.

The first prize was won by Mr. J. S. KELLY, Claremont Gardens, Esher. All his items were worthy of mention, but perhaps the very best were Solid White Celery, Autumn Mammoth Cauliflower, Selected Gladstone Pea, King Edward Potato, Alderman Pea, Exhibition Brussels Sprouts and Perfection Tomato. 2nd, Mr. T. JONES, Tirrydale Square, Ammanford, who showed perfect Cucumbers, Beet, Peas, Runner Beans and Tomatos.

There were three exhibits in the class for six kinds, and of these the best was decidedly that shown by C. A. CAIN, Esq., The Node, Welwyn (gardener Mr. T. Pateman), who staged magnificent Ailsa Craig Onions, Major Clarke Celery, and Extra Early Autumn Giant Cauliflower; 2nd J. W. BEDFORD, Esq., The Braes, Berkhamstead, whose strongest dishes were Alderman Pea, Exhibition Brussels Sprout and Perfection Tomato; 3rd, G. THORN,

Esq., Sprotlands, Willesborough (gr. Mr. M. Hoad).

COLLECTIONS OF POTATOS.

There were no fewer than six collections of twelve varieties, and nearly all were of considerable excellence. The first prize was won by G. THORN, Esq., whose dishes were all admirable. The very best Kidneys were Edinburgh Castle, English Beauty and White City; the best Rounds Great Scot, Early Round and Abundance; 2nd, A. THOMAS, Esq., Willow Red Farm, Kingsworth, who staged splendid dishes of Majestic, Favourite and What's Wanted; 3rd, Rt. Hon. Sir FREDERICK HALSEY, Gaddesdon Place, Hemel Hempstead (gr. Mr. T. Avery).

The judges subsequently discovered that Mr. A. THOMAS, the second prize winner, had included two dishes of Majestic, so his exhibit was disqualified, and the second prize awarded to Sir F. HALSEY.

The class for six immune varieties was not so successful. There were six exhibitors, but the general quality was poor. The first prize was awarded to the Rev. J. R. LEIGH, The Vicarage, Yalding (gr. Mr. J. Johnson). 2nd, Mr. F. HOOD, Willesborough; 3rd, Mrs. WALLIS TOLLER, Woodside, Weybridge (gr. Mr. G. Crabb).

Later in the day two of the prize exhibits were disqualified for including non-immune varieties.

Three exhibitors each staged six varieties of Onion in most praiseworthy condition. All the bulbs were very firm and of good shape. The first prize was won by W. H. MYERS, Esq., who included perfect examples of Ailsa Craig, both oval and round types, and Brown Globe; 2nd, Hon. Mrs. GREVILLE, whose oval Ailsa Craig were particularly good; 3rd, Mrs. FARNHAM, Witley, Surrey (gr. Mr. J. Binnington).

Collections of six salads were arranged by W. H. MYERS, Esq. and the Hon. Mrs. GREVILLE, who received the first and second prizes respectively. In both cases Celery, Beet, and Cucumbers were very good, while the first prize collection was strongest in Lettuce.

SINGLE DISH CLASSES.

There was considerable competition in these classes, and in most instances the quality was reasonably good. The very best was of Peas, French Beans, Turnips, Beet, Cucumbers, Parsnips and Carrots. The work of the judges in various instances induced adverse comment, with which we were at times in agreement, but, after all, judges, like ourselves, are only human and "every eye forms its own beauty." In the following list we give the names of the first and second prize winners respectively:—

Runner Beans.—Sir F. HALSEY; Mrs. G. F. AUSTEN, Capel Manor, Horsmonden (gr. Mr. A. Woodgate).

French Climbing Beans.—The Hon. Mrs. GREVILLE; W. H. MYERS, Esq.

French Dwarf Beans.—The Hon. Mrs. GREVILLE; C. A. CAIN, Esq.

Globe Beet.—Mr. R. STAWARD, Panshanger Gardens, Herts.; Rev. T. G. WYATT, Little Haywards, Surrey (gr. Mr. J. E. Shirley).

Long Beet.—Hon. Mrs. GREVILLE; Mr. R. STAWARD.

Brussels Sprouts.—C. A. CAIN, Esq.; Sir F. HALSEY, with 50 buttons, and C. A. CAIN, Esq.; Mr. R. STAWARD, for three plants each.

Cabbage.—The Hon. Mrs. GREVILLE; C. A. CAIN, Esq.

Savoy.—The Hon. Mrs. GREVILLE and C. A. CAIN, Esq.

Cauliflower or Broccoli.—Mr. W. TAYLOR, Gornshill, Shrewsbury; W. H. MYERS, Esq.

Celeriac.—No first; 2nd, C. A. CAIN, Esq.

Celery, White.—Mrs. FARNHAM; W. H. MYERS, Esq.

Celery, Red.—The Hon. Mrs. GREVILLE; C. A. CAIN, Esq.

Cucumbers.—Mr. T. JONES; the Hon. Mrs. GREVILLE.

Leeks.—Mr. T. JONES; the Hon. Mrs. GREVILLE.

Marrows.—W. H. MYERS, Esq.; G. THORN, Esq.

Onions.—W. ENGLAND, Esq., 15, Fester Street, Cadoston; Mr. R. STAWARD.

Parsnips.—The Hon. Mrs. GREVILLE; F. M. VOKES, Esq., Birch Lawn, Sholing, Hants.

Carrots, long.—W. H. MYERS, Esq.; Hon. Mrs. GREVILLE.

Carrots, short.—Hon. Mrs. GREVILLE; Mrs. G. F. AUSTEN, Capel Manor, Horsemonden (gr. Mr. A. Woodgate).

Pras.—Hon. Mrs. GREVILLE; W. WEST, Esq., Crabwood, Sparsholt, Winchester.

Turnips, white.—Mrs. W. TAYLOR; Rev. T. G. WYATT.

Turnips, purple, red or green-topped.—Mrs. G. F. AUSTEN; Hon. Mrs. GREVILLE.

Turnips, yellow.—Mrs. W. TAYLOR; Mr. R. STAWARD.

Potatoes, white.—Hon. Mrs. GREVILLE; C. A. CAIN, Esq.

Potatoes, coloured.—Sir M. TURNER, Bedfords, Havering (gr. Mr. A. E. Battett); Mrs. WALLIS TOLLER.

Kale, curled.—Mrs. FARNHAM; C. A. CAIN, Esq.

Tomatoes, red.—F. M. VOKES, Esq.; Hon. Mrs. GREVILLE.

Tomatoes, yellow.—W. H. MYERS, Esq.; G. THORN, Esq.

Any other Vegetable.—Hon. Mrs. GREVILLE, for fine roots of Salsafy; 2nd, Mr. R. STAWARD, for splendid Lettuce of the Continuity type. In this class Shallots, Sutton's Rose Artichokes and Improved Sugar Corn were also shown.

NATIONAL ROSE.

SEPTEMBER 23.—The autumn show of Roses in the R.H.S. Hall, Westminster, on this date, was a pronounced success. There was an abundance of really good blooms, and competition was keen. The general view in the hall was fully worthy of the occasion. The tabling had been arranged so as to give ample room space for the comfortable exhibition of the exhibits, and although there was a large attendance there was no crowding of visitors. The addition of fine Palms on the staging provided a welcome foil to the Roses and effectively broke up the level of the tables.

Thanks to the excellent methods of Mr. Courtney Page and his assistants, all the exhibitors' paraphernalia was cleared away in good time and the judging completed before the hour appointed for admitting the members of the Society who, on so many other occasions, have waited in a queue for the doors to be opened.

NEW ROSES.

These are always the most popular feature of the National Rose Society's shows and, as usual, as soon as the show was opened many visitors proceeded to view and appraise the novelties, and throughout the remainder of the day there was a great number of enthusiasts at the tables. No fewer than 19 varieties were submitted to the Committee, but, exercising a wise restraint, they awarded only two Gold Medals and three Certificates of Merit. Opinion was divided as to whether one at least of the certificated varieties should not have had the highest honour, but all seemed agreed as to the Gold Medal Roses. In respect to this, it was interesting to note that the several varieties on view which had previously been certificated received no further mention, and indeed, as shown their merits did not warrant further recognition.

GOLD MEDAL.

Courtney Page.—This will undoubtedly be a great Rose of the future, for it is the finest crimson H.T. Rose that has yet been shown. The bloom is of perfect, full form and of large size without the slightest suggestion of coarseness. The rich crimson colour has a fascinating darker shading in the "heart" of the flower, which has a sweet fragrance, and it possesses sufficiently long, stout stalks.

Una Wallace.—This is another excellent H.T. Rose that should have a great future, and it is also of splendid shape with large size. It is recommended for all purposes. The colour is a beautifully clear, cherry-rose, and the variety is said to be unusually free flowering. Both of these Gold Medal Roses were raised and shown by Messrs. S. MCGREY AND SONS.

CERTIFICATE OF MERIT.

Mrs. John Inglis.—A very handsome H.T. Rose of light cerise colour and broadly conical shape. The petals are large and stout and the foliage is dark green. It is recommended for all purposes. Raised and shown by Messrs. S. MCGREY AND SONS.

J. G. Glassford.—This attractive H.T. Rose was admired by many at the Regent's Park show. It is of large size and has broad, stout petals of a bright brick-red colour, shaded with crimson towards the base. Raised and shown by Mr. HUGH DICKSON.

Coral Cluster.—A very dainty little Polyantha variety which sported from Orleans. It is very free flowering, and the individual flowers, which are perfectly formed, average 1½ inch across. The colour is a pale coral-pink. Shown by Mr. R. MURRELL.

OTHER NOVELTIES.

Besides the several varieties that were certificated previously at Regent's Park, the following novelties were of more than average merit:—*Evaline*.—A very free Polyantha Rose of good shape, pale flesh colour and delicate fragrance. Shown by Mr. D. PROSSER. *Cardinal*.—A very large, soft rose-pink bloom, with much of the La France form. Mrs. Hutchinson Swanston.—A good garden Rose of full, though flattish shape. The deep rose-pink colour is lightened by cherry-rose at the tips. This and the foregoing were shown by Messrs. ALEX. DICKSON AND SONS. *Admiration*.—The uncommon coloring leads one to hope that this will be seen later in better condition. It is a fine bloom, and the peach-coloured veining and shading is unique. Shown by Messrs. S. MCGREY AND SONS. *Nicholas of Fresnoy*.—A small H.T., very fragrant, and of fascinating apricot shading. Shown by Mr. D. PROSSER.

GROUPS OF ROSES.

The rule which prohibits the use of exhibition boards in the "Representative Groups" of Roses is a very wise one and results in much more effective displays than otherwise would be the case.

There was no group on a floor-space, but the five large collections on staging, in Class 11, almost filled the space at the side of the hall. These generous collections of highly decorative Roses were the subjects of much deserved admiration throughout the afternoon, and they added much to the attractions of the show.

The 1st prize was won by Messrs. B. R. CANT AND SONS, who, exercising wise restraint in quantity, had a highly attractive exhibit, and it is not too much to say that the first prize was won as much by reason of the skill in arrangement as by the quality of the blooms. At the back there were tall stands of such free-flowering Roses as Ellen Poulsen, Mrs. W. H. Cuthash and George Elgar, while of the large-flowered varieties the chief were Mrs. W. C. Miller, K. of K., Lady Hillingdon, Ophelia, Henrietta, Juliet, Christine and Caroline Testout. Messrs. BEES, LTD., were 2nd, and their collection, as well as the remained, suffered for an over abundance of material, though the masses of Independence Day were very effective. The Queen Alexandra Rose and Mme. Ed. Herriot were also represented and presented glowing masses of colour. Other attractive sorts were George Dickson, Mrs. J. Laing, Caroline Testout's, Florence Forrestier and General McArthur. Mr. ELISHA J. HICKS was 3rd, and he showed good vases of Danae, Moonlight, Red Letter Day and Ophelia.

In the class for a smaller group under similar conditions Messrs. CHAPLIN BROS. were 1st with a very good arrangement of such sorts as Hadley, Isobel, La Tosca, Golden Emblem and Ophelia. Mr. T. P. EDWARDS, the only other

exhibitor, was 2nd, and he included attractive vases of Los Angeles, The Queen Alexandra Rose, Ophelia and Henrietta.

Only Messrs. F. CANT AND Co. set up 36 distinct varieties, and they were rewarded with the 1st prize for a most commendable display, in which K. of K., Lady Hillingdon, The Queen Alexandra Rose, Juliet, Ophelia, Isobel, Mme. Ed. Herriot and similar varieties were used to good purpose.

In the class for 18 varieties the competition was considerable and very keen. Here chief honours fell to Mr. G. PRINCE who had an excellent display. His outstanding sorts were Los Angeles, Mrs. W. Christie Miller, Ophelia and Mrs. E. Powell; 2nd, Mr. BURCH, who had splendid vases of Mme. Ed. Herriot, Margaret Dickson Hamill and The Queen Alexandra Rose.

Mr. Mattock was the most successful exhibitor of twenty-four varieties of Decorative Roses, and his vases of such as K. of K., Mme. Ed. Herriot, La Tosca, and Moonlight were admirable; 2nd, Messrs. F. CANT AND Co.

In the class for nine similar varieties Mr. G. LILLEY was 1st with a fine display of such as Hadley, Miss May Marriott and Abel Chatenay; 2nd, Messrs. T. SPOONER AND SONS, who included especially good vases of Rayon d'Or and Miss Dorothy Mocatta.

EXHIBITION ROSES.

The two exhibits of twenty-four exhibition Roses were both very creditable. The blooms were all of good size and form, and of bright, fresh colouring. The first prize was won by Mr. HUGH DICKSON, whose best blooms were of Molly Blick, Augustus Hartmann, Mrs. James Williamson, Caroline Testout, George Dickson, Margaret Dickson Hamill, Mrs. J. Welch, Mrs. Henry Balfour, Marjorie Bulkeley and Coronation. Messrs. ALEX. DICKSON AND SONS won second prize, and they included excellent blooms of Lady Inchiquin, W. G. Gannet, Lord Haig, Lord Allenby, Mrs. Danbar Butler, Gorgeous, George Dickson, Mrs. Bryce Allan and Capt. F. Bald.

In the class for eighteen blooms there were five exhibits, but the quality was not so high as in the premier class. Mr. ELISHA J. HICKS was an easy first and his best blooms were of Mrs. Elisha Hicks, Miss Willmott, George Dickson, J. B. Clarke, Muriel Dickson and Candeur Lyonnaise; 2nd Mr. J. BURCH, whose collection was rather uneven, though he had very good specimens of Hugh Dickson, Gorgeous and Mrs. G. S. Shawyer; 3rd, Messrs. CHAPLIN BROS.

Generally, the Tea and Noisette blooms were pale-coloured rather small and a trifle weather-stained. The best twelve were set up by Mr. H. DREW, and he included very presentable examples of Maman Cochet, White Maman Cochet, Mrs. Leon Constantine, Hy. Kirk, F. V. Marshall and W. R. Smith; 2nd, Mr. G. PRINCE.

BASKETS OF ROSES.

The various classes for Roses shown in shallow baskets were one of the best features of the show. In most instances, the quality was high and the arrangement very attractive, while entries were numerous.

The best three baskets of exhibition Roses were of Frau Karl Druschki, Hugh Dickson and Caroline Testout, as shown by Mr. HUGH DICKSON; 2nd, Mr. MATTOCK, with the same varieties; 3rd, Mr. J. BURCH.

The five baskets of decorative Roses which won the first prize for Messrs. CHAPLIN BROS. were excellent in every respect. The varieties were Red Letter Day, Margaret Dickson Hamill, Ophelia, Edith Cavell and Scarlet Emblem; 2nd, Messrs. ALEX. DICKSON AND SONS, who included beautiful baskets of Lady Inchiquin and Mrs. Wemyss Quin.

Mr. G. LILLEY was the best of five good exhibitors of three baskets of decorative Roses with really excellent exhibits of Ophelia, Mme. Ed. Herriot and C. E. Shea; 2nd, Messrs. CHAPLIN BROS., who included charming baskets of Chas. K. Douglas and Lady Pirrie; 3rd, Mr. G. PRINCE.

Messrs. CHAPLIN BROS. excelled in the class

for three of Polyantha Roses, showing Jessie, Mrs. Cutbush and Orleans beautifully; 2nd, Mr. E. J. HICKS.

AMATEURS' CLASSES.

The quality of the blooms and the competition generally in these classes was decidedly better than might have been expected, and in a few instances reached a high level of excellence.

Rev. F. R. BURNSIDE, Great Stanbridge, won the first prize for 12 exhibition blooms, showing such as J. B. Clarke, Coronation and Maman Cochet; 2nd, Mr. J. KENNEL, Dulwich.

In the class for six blooms, Mr. JOHN HART, Potters Bar, showed particularly fine blooms of Augustus Hartmann, Hugh Dickson and Lady Alice Stanley; 2nd, Mr. W. SUNDERLAND, Driffield, who had beautiful blooms of Florence Forrester and Mildred Grant. Mr. R. DE V. PRYOR, Hitchin, had the best six blooms, and his examples of Lady Plymouth and White Maman Cochet were particularly good, while in the class for growers of fewer than 500 plants, Mr. W. E. MOORE, High Wycombe, excelled.

Mr. W. M. BAMBRIDGE, Kettering, was the most successful of many good exhibitors in class 24, where he had a superb bloom of George Dickson, and Mr. G. R. FREER, also from Kettering, was similarly successful in the next class.

Mr. A. CURTIS, Streatham Hill, won first prize with six good blooms in the class restricted to growers within ten miles of Charing Cross.

The Tea and Noisette Roses were not so good as the general exhibition Roses, but Mr. W. E. MOORE had an especially meritorious collection of six blooms.

In the classes for Decorative Roses, Mr. J. MARRIOTT, Netherfield, had two splendid baskets of cut blooms and Mr. J. HART was a good second. The best of five single baskets was Irish Fireflame by Mr. G. A. HAMMOND, Burgess Hill, and Mr. G. MARRIOTT was placed 1st in the class for those who grow and stage their own Roses.

The table decorations were all unusually successful. In the open class, Mrs. MAY, Walthamstow, was first with a tasteful arrangement of Ophelia, and in the amateurs' class, Mrs. ALEX. ROBINSON, Bourne End, who has transferred from the professional ranks, was first with the same variety, while Mrs. COURTNEY PAGE was second with an attractive table of Sunburst.

The bowls and vases of Roses were especially attractive. In the open class, Mrs. A. BIDE, Farnham, won first prize with a skillful arrangement of Mme. Ed. Herriot. In the amateurs' classes, the most successful exhibitor was Mrs. COLSTON HALE, Warminster, who had a delightful arrangement of Isobel in a glass bowl.

TRADE NOTES.

THE Chamber of Horticulture has received a contribution of £80 from the Ministry of Agriculture towards the costs of transporting the British exhibits to the recent Antwerp Exhibition. The Chamber has under consideration the question of organising an exhibit of Chrysanthemums at the forthcoming Chrysanthemum fete at Antwerp. At the invitation of the Antwerp Exhibition Authorities the Chamber has decided to associate itself with the presentation and banquet to be given in honour of Mons. Pernet-Ducher. The question of the carriage of pot plants has been discussed with the railway authorities, and a sub-committee appointed to deal with the reclassification of railway rates. The following new members have been elected:—Edmund Rochford, Ltd. (Stanstead), John Rochford and Sons, Ltd. (Waltham Cross), E. T. Willis, of Willis Bros., Ltd. (Harpenden), White, Tomkins and Courage, Ltd. (Boston), E. C. Wilson, of Tomlinson and Hayward, Ltd. (Lincoln), Wm. Cooper and Nephews, Ltd. (Berkhamsted), T. Garner, of British Fertilizers Co. (Birkenhead), Buxton Lime Firms Co., Ltd. (Buxton), J. M. Bridgford and A. H. Howard, of Watkins and Simpson (London), W. Webb and Sons (Hale, Liverpool), and Shawyer and Sons (Cranford).

ANSWERS TO CORRESPONDENTS.

ASTERS DISEASED: *S. G.*—There is mycelium in the tissues of the stem, probably of the fungus *Phytophthora*, which commonly attacks Asters. Next season spray the plants at an early stage with Bordeaux mixture.

BEAN FROM A FLOWER SHOW: *T. B.* The variety is known as the purple-podded Bean.

CELERY DISEASED: *Constant Reader* and *R. A.* The disease is caused by the fungus *Septoria Petroselinii* var. *Apii*, a complaint that has proved very troublesome in recent years. It is hardly possible to effect a cure at this stage, and we doubt whether anything can be done to check the disease now. Another year, spray the young plants at intervals from the seedling stage onwards with weak Bordeaux mixture or with a solution of potassium sulphide.

GARDENER'S NOTICE: *E. C. H.* The four weeks' notice given you is sufficient, but you are entitled to full wages during that period. If, as we gather, your illness is due to the after-effects of active service, we certainly think your employer should not insist on his strict legal rights.

GRAPES DISEASED: *S. E. A.*—The berries are affected with spot disease caused by the fungus *Gloeosporium ampelophagum*. Dust the shoots and leaves with flowers of sulphur. After an interval of ten days give another dusting, but add a small quantity of quicklime to the sulphur. If the disease is not cured continue the applications at similar intervals, but increase the amount of quicklime on each occasion until the sulphur is only slightly in excess of the lime.

NAMES OF FRUIT: *C. G. A.*—Fruit decayed, probably Jefferson. *F. P. 1.* Five-Crown Pippin; 2. Mabbot's Pearmain; 3. Early Nonpareil; 4. Benoni. *M. S. P.*: The fruit is known as the Cherry Plum or Virginian Cherry. *A. C. B.*: Gooseberry Apple.

NAMES OF PLANTS: *J. C.*: *Rubus odoratus*.—1. *Neal*: 1. *Magnolia tripetala*; 2. *Halesia corymbosa*; 3. *Stachyurus praecox*; 4. *Liquidambar styraciflua*; 5. *Cornus macrophylla*; 6. *C. brachypoda*; 7. *Piptanthus nepalensis*; 8. Seed in flower; 9. *Neillia opulifolia*; 10. *Aesculus parviflora*; 11. *Alnus glutinosa* var. *lacinata*; 12. *Ailanthus glandulosa*; 13. *Aster Amellus* var.; 14. *Calluna vulgaris*; 15. *Erica vagans*.—*W. M.*: *Rhodostachys piteaifolia*.—*E. A.*: *Pyrus Aria* (White Beam tree).—*R. S. K.*: 2. *Hypericum quadrangulum*; 4. *Liriope spicata variegata*; 5. *Melissa officinalis* (Balm); 7. *Nepe* a *Mussini*; 8. *Tanacetum vulgare* (Tansy); 11. *Spiraea japonica*; 12. *Steronema heterophyllum*; 13. *Potentilla fruticosa*; 15. *Ajuga reptans* var. *atropurpurea*. The others were not in a condition for identification.—*W. C. F.* We do not recognise the variety of *Carnation*.—*D. and W. C.* *Solanum* sp., probably *Wendlandii*; the flowers had all fallen and were dried up; 2. *Columnea gloriosa nana*.—*M. H.*: 1. *Tanacetum vulgare*; 2. *Eupatorium purpureum*; 3. *Olearia Haastii*.

RAMBLER ROSES: *Bushbury*. *Excelsa* is probably the best deep red Rambler Rose, in growth, freedom of flowering, and brilliancy of colour, which does not fade in bright sunlight. The plant has a semi-drooping habit of growth, and is thus very suitable for covering a pergola. There is no variety of the colour of *Lady Hillingdon* that can be recommended for covering a pergola. If it is imperative to have a yellow sort you will find *Claire Jacquier* free in flowering, opening its blossoms in July. As a companion to *Excelsa*, flowering at the same time, August, *Dorothy Dennison*, shell pink, the base of the petals creamy white, is one of the finest of climbing Roses. The blossoms of this variety last a long time in a fresh condition.

RESTRICTING OVERGROWN WATER LILIES: *F. K.* The best method of restricting the overgrown leafage at this season is to cut off the foliage with a sickle or scythe. If this is done at

the water level, fresh young leaves will soon appear, but they will not from now onwards be crowded. Should the water be too deep for waders, a boat will be needed. Next spring, lower the water and then break up the clumps. Do not hesitate to do this somewhat severely for the growths will become re-established. The latter part of April is the best time to do this work and it well repays for being done thoroughly. If it is a question of too much mud, it will be advisable to consider the complete removal of the Lilies and replanting them again.

ROSES DISEASED: *J. A.* and *R. C.* The plants are attacked by the rust disease (*Phragmidium subcorticatum*) and the leaves you sent show the autumn stage when the spotting assumes a black colour. Gather and destroy all the diseased leaves and next season spray the plants in the early spring before the buds expand, with a solution of copper sulphate, 2 ounces in 3 gallons of water. Dilute Bordeaux mixture or ammoniated carbonate of copper solution checks the acidium and uredo stages.

SOIL FROM A VINE BORDER: *H. C.*—The sample of soil you send is much too light in texture for Vines, which succeed best in a moderately heavy loam. They may grow fairly well for a time in a light soil, but frequent necessary heavy waterings will soon wash away all the soluble plant food. If it is necessary to use any of the soil containing the white worms, it should be partially sterilised by heating on an iron hurdle over a flat fire, or by applying formaldehyde (commercial 40 per cent) at the rate of 3½ pints to 50 gallons of water, using one gallon to each cubic foot of soil.

TOMATOS DISEASED: *F. D.* The yellow patches causing discoloration on your Tomato fruits are due to an absence of potash in the soil. Next season, mix plenty of wood ash with the compost or use a concentrated potash fertiliser such as kainit or sulphate of potash.

TOMATOS FOR EXAMINATION: *Anxious, Putney*. The fruits were packed in an unsuitable box and were in a condition of pulp when they reached the office. Your letter, written in indelible pencil, had been rendered so illegible by the staining of the fruits that we were unable to read it.

VEGETABLE CROPS FAILING: *C. E.*: In all probability you will have to drain the land before you are able to bring it into a proper condition for the successful cultivation of vegetable crops. After proper drainage has been arranged, add lime to the soil, and also any gritty material that can be accumulated, such as road sweepings and old potting soil. Leaf-mould will also help to make the soil less adhesive, and at the same time will increase its fertility.

VINE LEAVES DYING: *G. P.* The trouble is not due to fungous disease. The unhealthy condition of the foliage must, therefore, be due to some wrong cultural treatment. It is probable that the roots have received either an excess or an insufficiency of water, and that the drainage is at fault. When the Vines are defoliated lift some of the roots and ascertain if their condition is satisfactory. If not, replant them in a suitable compost, taking care to see that the drainage is efficient.

WOODLICE:—*Constant Reader*: A good method of destroying Woodlice is to mix Steiner's "Vermin Paste" with barley meal or middlings, and put on pieces of glass, wood or tin, and then place in the haunts of the woodlice. The creatures may also be trapped by placing scooped out Oranges or Potatoes near their haunts or by filling pots with damp moss or fresh horse manure. You do not state if the Peaches are under glass; if so the woodlice may be destroyed by fumigation with hydrocyanic acid gas.

Communications Received.—*H. T.*—*E. B.*—*W. W.*—*C. K.*—*W. K.*—*E. B. A.*—*W. J. M.*—*C. E. P.*—*J. M.*—*G. S. W.*—*F. K. W.*—*F. T.*—*L. G. B.*—*G. T.*—*G. M. A.*—*P. W. H. S.*—*W. V. de W.*—*A. B.*—*S. L.*—*J. C.*—*T. B.*—*W. K.*—*T. P.*—*H. W.*

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 50.1

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, October 6, 10 a.m.: Bar. 29.56, temp. 65°. Weather—Sunny.

To the horticulturist interested in plant breeding or in the study of heredity, Miss Saunders' Presidential address to the Botanical Section of the British Association will prove—albeit, by no means easy reading—of absorbing interest. Recent research has carried us a long way beyond the Mendelian starting point, and it is now proved that although many characters resemble in their behaviour in inheritance those on which Mendel based his hypotheses—many others do not. For instance, it has now been shown that, whereas, some plant-characters depend for their expression on the presence of a single factor, others depend on the simultaneous presence of more than one factor. The hairiness of *Lychnis-vestertina* has been shown to depend on a single factor; crossed with the hairless variety, *glabra*, its offspring exhibit dominance in *F₁*. They are hairy, and their self-fertilised offspring show normal segregation into three hairy, one glabrous. On the contrary, in the case of the Stock (*Matthiola incana*), Miss Saunders has shown that no fewer than four factors are concerned in the production of hairiness, and that the absence of any one of these four factors results in glabrousness. Again, the occurrence of ligules on the leaf of the Oat has been shown to depend on the presence of four or five factors; but in this case, any one of these factors suffices to produce the ligulate condition, and, hence, since ligulate plants may have very different genic constitutions, the *F₂* generations resulting from crosses between a non-ligulate plant and one or other differently constituted ligulate plants must give very different numerical ratios. Among the many results of positive value which have been obtained recently by research along Mendelian lines, are those of Heribert Nilson which demonstrate that specific

characters are, in their inheritance, not exempt from obedience to Mendelian rules. Thus, this author has shown that in Willows (*Salix*) those characters which are regarded by systematists as of specific significance depend on factors which "Mendelise" in normal fashion. He arrives also at the interesting conclusion that specific-character factors are more general in their effect on the plant structure than are the varietal-character factors and that, unlike the latter, the former may affect many or all parts of the plant and give rise to striking peculiarities in the general appearance of the plant in which they are present. With these facts in view, it is possible to gain some insight into the puzzling fact that species which, in outward appearance, are very different from one another may hybridise, whereas those which to the eye appear more nearly related may prove sterile when crossed with one another; for the marked difference may be but the expression of one or few factors only, whereas apart from these factors—the effects of which loom large to the eye—the two apparently widely dissimilar species may be otherwise of very similar factorial constitution. Miss Saunders' remarkable discoveries of the linkage in Stocks (*Matthiola*) of factors, e.g., for flower colour, with the sex nature of the germs cells, which have already been described in these pages, serve in her address to illustrate the progress which is being made and the difficulties which have to be surmounted in linking up the behaviour in inheritance of plant characters with the observed behaviour of the chromosomes during the nuclear division, as a result of which the germ cells are produced, and although this branch of the subject is too intricate to be followed in detail by any but experts, it is probable that its pursuit will lead to the solution of many puzzles in inheritance; as for example, the dissimilarity of reciprocal hybrids, such as those raised from species of *Digitalis*, *D. grandiflora* and *D. lutea*, the hybrids between which resemble markedly the mother parent. Already it is known as the result of Gregory's researches that the giant forms of *Primula sinensis* which sometimes appear in cultivation, contain double the number of chromosomes present in the forms of normal size, so that it appears reasonable to infer that the detailed study of the structure and behaviour of the dividing nucleus, although seemingly remote from all bearing on affairs of general utility, will ultimately provide the clues to the laws of heredity. It is the recognition of such factors as this that must cause horticulturists generally to welcome the suggestions with which Miss Saunders concludes her address—that there should be more organised co-operation between all those sections of investigators and breeders interested in the discovery of the laws of inheritance and in the improvement of the races of plants and animals.

Prizes for Raisers of New Chrysanthemums.—

The new president of the French Chrysanthemum Society, M. René Moumèja, has offered an annual prize of 200 francs, either in cash or in form of a medal at the option of the winner, for the raiser of new seedling Chrysanthemums who gains the highest number of points at the Society's Floral Committee meetings. The dearth of novelties in France during the past seven or eight years has been unusual, and the raisers of novelties are fewer now than for many years. In place of the annual Congress, which the Society used to hold before the war, it has been decided to hold an extraordinary general meeting in Paris, on the 28th inst. It will be held in the Hall of the National Horticultural Society of France, 84, Rue de Grenelle. One

of the items on the agenda will be to consider the resumption of the Annual Congress as from 1921. In the Society's official journal, *Le Chrysanthème*, No. 179, just published, will be found a sympathetic biographical notice of the late Mr. Thomas Bevan, who was an old member of the Society and a frequent visitor to its shows and congresses. Copies can be obtained from the Secretary, M. Ph. Rivoire, 16, Rue d'Algérie, Lyons. We also note that the supplementary list of new Chrysanthemums sent out from 1914 to 1920 has reached its concluding part in this issue of *Le Chrysanthème*. It is interesting to record that there is every probability of this interesting little publication being now issued every month, instead of every two months, as has been the case since its revival last year. The additional expense is being generously covered by the new President.

Honour for Mr. James Whitton.—At the recent election of office-bearers of the Incorporated Trades of the City of Glasgow, Mr. James Whitton, J.P., V.M.H., Director of the City Parks, was appointed Deacon of the Cordwainers. *The Bailie*, a popular Glasgow weekly, gives an excellent sketch of Mr. Whitton and an interesting account of his career, paying him high compliments for his work. Mr. Whitton has been a member of the Cordwainers Incorporation for a number of years.

An Interesting Appointment in Nyassaland.—Captain John O'Brien, son of Mr. Jas. O'Brien, V.M.H., has been appointed Administrative Officer at Nyassaland. With his brother, Captain Jas. O'Brien, M.C., he went to the Western front in October, 1914, and later to the Salonika area. In the spring of 1917 he passed to the King's African Rifles and served throughout the campaign, and later rendered important services in settling the occupation of Nyassaland, his knowledge of the natives, their habits and their language, together with their great liking for him, standing him in good stead and fitting him for the new appointment. During his war service he was wounded three times, but has come through in perfect health.

National Sweet Pea Society.—The annual general meeting of the National Sweet Pea Society will be held at the offices of the British Florists' Federation, 35, Wellington Street, Covent Garden, London, W.C., on Tuesday, the 19th inst., at 2.30 p.m. The General Committee propose that Rule 3 be altered, and shall read as follows:—"That the Society consist of members paying an annual subscription of not less than seven shillings and sixpence. Subscriptions are due on January 1 each year."

Edinburgh Bowling Greens and Golf Courses.—At a recent meeting of the Parks' Committee of the Town Council of Edinburgh, a report was submitted of the revenue from the Public Bowling Greens and Golf Courses for the season. The effect of the boycott of the bowling greens by the players, on account of the increased charges, is very marked. The takings for the bowling greens were £155 17s. 10d., as compared with £1,001 6s. 11d., and for the use of shoes, £22 18s. 5d., against £100 6s. last year. The revenue from the Braid Hills Golf Courses amounted to £1,377 18s. 8d., and the income from the tennis courts came to £1,017 2s.

The Kew Arboretum in Autumn.—A ramble through the collection of trees and shrubs at Kew on a fine afternoon in late September and early October reveals much of interest. Near the Victoria Gate a group of the Chittam Wood (*Rhus cotinoides*) at once arrests attention with its richly-coloured scarlet, orange, and yellow foliage. In the *Berberis* Dell, *Berberis polyantha* is fruiting very freely. Near the large Temperate House the new Chinese *Viburnums* are fruiting in profusion, particularly striking being the quantities of shining red fruits on *V. betulifolium* and *V. lobophyllum*. Across the path is a plant of the new *Buddleia yunnanensis*, which has silvery-grey leaves and white flowers with a showy orange yellow eye. Among the *Cotoneasters* nothing equals the old

favourite *C. frigida* represented by tall spreading bushes, 14 or 15 feet in height, all aglow in the afternoon sun with large clusters of rich, bright red fruits. A bush of *Pyrus crataegifolia* is gay with autumn foliage and Cherry-like, yellowish-red fruits. There is a wealth of colour in the Thorn (*Crataegus*) collection. A perfect specimen of *C. orientalis* is handsome in foliage and fruit, and another beautiful Thorn is the large, red-fruited variety of the Hawthorn, *C. Oxyacantha Gireoudii*. Two Chinese Roses in a border near the Pagoda, *Rosa Davidii* and *R. setipoda*, the former with light and the latter with darker red fruits, are very showy. The wonderful autumn colouring of *Parrotia persica*, is a well-nigh perfect study in crimson and gold, and the brilliant red foliage of the Tupelo Tree, *Nyssa sylvatica*, is also strikingly beautiful.

Scottish Horticultural Association.—This Association has just issued to members its *Transactions* for the session of 1919, being part 4 of Vol. III., New Series. It contains a number of valuable papers read at the monthly meetings of the Association; an appreciative obituary notice of the late Dr. J. H. Wilson; the Association's Roll of Honour, final list; and the Proceedings of the Association, which include a statement of the accounts.

Aspen Wood for Match Making.—A recent note in the daily Press states that Messrs. Bryant and May, Limited, the match manufacturers, contemplate planting several thousand acres of the Aspen in Argyllshire for the production of wood for matches. In view of numerous experiments already made with Poplars in this country, the importation of Aspen (*Populus tremula*) seeds from Russia for the purpose seems hardly justified. Because Aspen wood was imported for the purpose from Russia in pre-war days, it does not follow that it is the most suitable to grow in this country. Even should climate and soil conditions be suitable, rapidity of growth is equally important here. It is hoped that those responsible for the experiments proposed will plant, side by side with the seedlings raised from Russian seeds, young trees propagated from cuttings of the quick growing hybrid Poplars. These include *P. Eugenei* of columnar habit, which, in the light soil at Kew, has grown to a height of 85 feet in thirty-two years; *P. generosa*, the new hybrid *P. angulata cordata* × *P. trichocarpa*, which in six years from seed is 27 feet in height on a lawn at Kew; *P. certinensis*, *P. serotina*, *P. marilandica*, *P. robusta* and *P. regenerata*. *P. tremula* is much slower in growth than these hybrids, while the average height of the trees in this country is not more than 40 to 50 feet. The tallest recorded tree is a specimen 60 feet in height at Little Sodbury Manor, Gloucester.

Deeside Field Club.—The members of this club recently visited Banchory Lodge (some 18 miles from Aberdeen) the residence of Miss Burnett Ramsay. The proceedings opened by Miss Burnett Ramsay giving a short but exceedingly interesting account of Banchory Lodge, with its many objects of historical interest and its collection of rare old books on horticulture and herbals. An inspection of the gardens, old-fashioned and modern, followed, and the beautiful terraces, lawns and Lily ponds proved a source of great interest. In the course of the afternoon, brief addresses were given. Lord Aberdeen referred to the two elements of the subjects which the club had in view—the scientific and the natural—and said there was no reason why the two should not be happily blended together and pursued in social harmony and fellowship. Mr. Macdonald, the Schoolhouse, Durris, read a short paper on "Field Orchids," of which, he said, there were no fewer than 9,000 species in the world. There were about 20 kinds of wild Orchids in the British Isles, of which the district in which they lived had a fair share. He suggested that the collecting, growing, and grouping of the wild Orchids of the district embraced by the club would be an interesting and valuable recreation for some of the young botanists of the club. On the motion of Lord Aberdeen, hearty thanks were extended to Miss Burnett Ramsay, the

Baron and Baroness Bentinck, and the other members of her house party, for the great trouble they had taken to make the club's visit a pleasant one, and to Mr. William Murdoch, secretary of the club, for his admirable arrangements.

Municipal Gift for the Purchase of Land for Public Use.—The late Mr. H. M. Gray, vice-chairman of the Leys Malleable Casting Company, has bequeathed the sum of £10,000 to Derby, his adopted town, and suggested that the money should be utilised for the purchase of land for allotments, or a park or a recreation ground.

Profitable Pears for Market.—In successful Pear growing for market, great care is required in the selection of varieties suitable both for the locality and the class of trade to be supplied. Mistakes in this direction are easily made from failure to appreciate the difference between garden and plantation conditions. With a view to assisting prospective planters, the Ministry of Agriculture has just issued a Leaflet (Leaflet No. 347), in which eighteen of the principal Pears grown for market are described, their good and their bad points being set forth. The varieties so described are Beurré Clairgeau, Beurré de Capiaumont, Caillot Rosat, Chalk (Crawford), Conference, Clapp's Favourite, Catillac, Dr. Jules Guyot, Doyenné du Comice, Durondeau, Emile d'Heyst, Fertility, Hazel (or Hessel), Lammus, Louise Bonne of Jersey, Marguerite Marillat, Marie Louise d'Uccle, and Moor Powl's Egg (Muirfowl's Egg).

Wisley Students' Successes.—The following students in the Royal Horticultural Society's School of Horticulture have recently completed their two years' course, and have been awarded the School Diploma, together with a prize of books.—Mr. A. Pearson, Mr. Walter R. Pearson, Mr. George Wood and Mr. Felix C. Brown. Mr. A. Pearson was awarded, in addition, the Nicholson Memorial Prize for observations.

New Species of Rhododendron.—In the recent issue of *Notes from the Royal Botanic Gardens, Edinburgh*, Vol. XII., Nos. LVII. and LVIII., Prof. Bayley Balfour, F.R.S., adds to the already extensive and admirable work he has accomplished in connection with the genus *Rhododendron*, by describing forty new species. These descriptions occupy about one hundred pages and deal chiefly with species discovered by Mr. G. Forrest.

White's "Natural History of Selborne."—At the conclusion of the bicentennial celebration of the birth of Gilbert White, the great Selborne naturalist, held at the Artworkers' Guildhall, an address was delivered by Dr. Gilbert White, a great grand-nephew of the naturalist. In his address he referred to the many editions of the *Natural History of Selborne*, and stated that these exceeded in number that of any other book excepting the Bible and *The Pilgrim's Progress*.

Horticultural Club.—A special general meeting of the members of the Horticultural Club was held on Tuesday last, in the Club room, R.H.S. Hall, Westminster. It was stated that the tenancy of the present Club room will expire at Christmas and that the Committee has been unable to obtain suitable alternative accommodation. The Chairman and Honorary Treasurer, Sir Harry Veitch, stated that the membership is approximately 200 and that the Club has a reserve fund of £600, invested in consols and war stock. They thus had funds to carry on for some time to come, and the Club room would remain available until the end of the year, when the position would have to be reconsidered. In the meantime, the Committee would endeavour to obtain suitable rooms. It was generally agreed that sleeping accommodation was necessary, especially for the country members, and that the present facilities were insufficient. Several members expressed the opinion that the Club should extend its basis so as to include a larger number of traders and especially those interested in the

Covent Garden trade. A resolution was passed that no immediate decision should be arrived at, in the hope that accommodation might be secured, but if such is not forthcoming, the members would be advised in January next that their subscriptions will not be called up for one year. It was also decided to form a small Committee to fully consider the question of reconstructing the Club on a wider basis of membership than at present.

Appointments for the Ensuing Week.—Monday, October 11.—United Horticultural Benefit and Provident Society's Committee meeting; Bath Gardeners' Society's meeting. Wednesday, October 13.—East Anglian Horticultural Club meeting.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Potato Jelly.*—Independently of any consideration of what may be the uses to which the extraction of starch from bad Potatoes may be put by the poor under present circumstances, it seems to me not unlikely that your agitation of this question may lead to the general adoption of this substance in all families as a useful and important article of our domestic economy. The readiness with which a good-sized basin-full of thick jelly may be procured from a single moderate-sized Potato, is a fact worth knowing. I have several times repeated the experiment, and find that it does not require more than eight minutes to change a raw Potato into a basin-full of most excellent jelly, which has only to be seasoned with a little sugar, nutmeg and white wine to please the most fastidious palate. To obtain this jelly in perfection, let a Potato be washed, peeled and grated; throw the pulp, thus procured, into a jug of water, and stir it well. Pass the mixture of pulp and water over a sieve, and collect the water which passes through into a basin. Let this stand for a few minutes, and a sufficient quantity will have fallen for the purpose required. Pour off the water and then keep stirring up the starch at the bottom of the basin, while boiling water is being poured upon it; and it will soon and suddenly pass to the state of a jelly. The only nicety required is to be careful that the water is absolutely boiling, otherwise the change will not take place. Mr. Darwin has recorded an instance of some of his attendants being unable to boil Potatoes above a certain height on the Cordilleras, owing to the diminution of pressure not allowing the water to become sufficiently heated before it boiled. There may, possibly, be some connection between the conditions under which Potatoes can be boiled, and their starch converted to jelly. Upon comparing this jelly with that from the starch called Arrow-root, and obtained direct from Bermuda, I find a difficulty in my own person in discriminating between their flavour, though an invalid, in the habit of eating Arrow-root, at once detected which was which. The difference, however, becomes more sensible when both jellies are made palatable with sugar, etc., for then, both the invalid, myself, and another person were equally decided in our preference of the jelly from the Potato, to that from the Arrow-root; the latter possessing a rather mawkish flavour, as though it had been prepared with smoky water. I know not whether medical men are able to point out any real difference in the composition of starch obtained from Potatoes, and that from Arrow-root; or whether past experience has shown them that the one is a more nutritious food for the invalid than the other; but certainly, arguing *a priori*, and with no wish to give them an opportunity of trying the experiment upon myself, I am inclined to think that sending to Jamaica for Arrow-root starch, at 2s. 6d. and 3s. a pound, is a most superfluous extravagance, whilst we can manufacture that from Potatoes at home for about 3d. or 1d.—*J. S. Henslow, Hitcham. Gard. Chron., October 11, 1845.*

Publications Received.—*Report and Observations for the Year 1919, with an Appendix*, by Joseph Baxendell. "Visiter" Printing Works, Southport. *Le Chrysanthème*, No. 179, Journal of the French Chrysanthemum Society; Lyon, Grosjean-Fongerat, 3, Rue Jangot.

NOTES ON WISLEY.

THE R.H.S. Gardens at Wisley are especially interesting just now, and those who have the opportunity of visiting them in the immediate future should do so. The many varieties in the extensive trial of Michaelmas Daisies are at their best. We must confess that the perennial Aster has never before appealed to us in so striking a manner, and we doubt if any garden has anything more beautiful to offer at this season than the magnificent clumps of the soft, rose-colored variety Lil Fardell, which grows five to six feet tall. Only a few growths have been allowed to develop on each plant, and the majority of them resemble huge posies of flowers. Of all the sorts under trial we think "the palm" would be awarded by the majority of visitors to the one named above, although the dwarfier Amellus King George, of soft blue shade and with flowers of exceptional size, runs it very closely for premier place among these easily-grown autumn flowers; it will be remembered that Aster King George formed the subject of the coloured supplementary illustration in *Gard. Chron.*, December 21, 1918. Other sorts that especially appealed to us were Ethel Ballard, bluish pink; Ryecroft Purple, an exceptionally effective sort; Mrs. Twynham, mauvy pink; Maid of Colwall, the best white sort in the trial; Nancy Ballard, a comparatively dwarf variety with rosy-pink heads; a variety of the *acris* section, with mauvy-lavender flowers of the "drop petalled" type; *cassubicus*, a fine Amellus variety of pale blue tone; and *Wienholtzia*, one of the dwarfest varieties, with a profusion of pretty pink flowers.

The plants constituting this trial are grown in an open situation and each clump has ample space for its development, so that they show to the fullest advantage, indeed, they appear much more beautiful grown in this way than when crowded with other subjects in the flower border.

Not far from the Asters is a broad, undulating border of tall, hardy perennial flowers, and these, too, were in their full glory, the majority being Composites. The rich colour of *Helenium superbum rubrum* appeals at once to the visitor, and the plants are thrown into greater relief by the taller background of perennial Sunflowers, of which there is a varied collection. The white *Eupatorium ageratoides* is very pleasing, and another good white border flower was *Achillea Ptarmica* The Pearl, which is getting past its best, but has been very fine. Several clumps of an elegant *Artemisia* provided pleasing tones of a silvery grey along the front of the border, where *Rudbeckia speciosa* displayed its rich yellow flowers, with their prominent, dark, cone-shaped discs, to advantage.

The Antirrhinums, in the very extensive trial of these flowers, were past their best, but enough of their beauty remained to make this part one of the gayest spots in the gardens.

Close by these may be found the Barberries, of which Wisley has one of the most complete collections in the country. Some had already begun to assume their autumn tinting, and the berries were colouring fast, but these will be better a little later. Glorious as many of these Chinese Barberries are when in fruit, we doubt if any will excel the plant of our native *B. vulgaris* growing by a path through the upper part of the rockery. The berries of this British hedgerow shrub were already ripe, and they hung in long coral-coloured clusters.

Most of the glories of the rockery had departed, and only a few of the plants had begun to put on their autumn dress, but a few late-blooming species provided touches of colour here and there.

Polygonum vacinifolium was making a brave show, with its spikes of pretty pink flowers, over wide patches, and there were clumps of *Gentiana sino-ornata*, with a plentiful crop of the characteristic blue flowers; whilst in a niche between two rocks *Wulfenia Amherstiana* hung out its narrow-petalled pink blossoms on long, arching inflorescences.

The small pool in the frame ground was still gay with the rich blue flowers of *Nymphaea stellata* Berlin var., which has blossomed in profusion this summer.

The Rose borders, in the main walk by the entrance, are giving a wealth of flowers, the outstanding variety being the scarlet-crimson General McArthur.

Lovers of rare and choice species of Primulas will be interested to know that *P. vincaeflora* is flowering finely in one of the frames; though an old species in cultivation, this blue-flowered Primula is one of the handsomest of its race.

There is much, too, of interest in the vegetable and fruit quarters. The plantation of Apples on the higher level is an object lesson in fruit culture. The trees are trained as large bushes, with their closely-spurred branches

ORCHID NOTES AND GLEANINGS.

FLOWERS of three pretty new crosses are sent by W. Waters Butler, Esq., Southfield, Edgbaston (gr. Mr. Matthews), for recording:—

LAELIO-CATTLEYA VIRGIL.—A cross between *L.-C. blechleyensis* (C. Warszewiczii × *L. tenebrosa*) and *C. Dietrichiana* (*Bowringiana* × *Iris*). It is a very handsome flower, seven and a half inches across, the sepals and petals being silver-white tinged with light mauve, and the broad lip, which indicates plainly the *C. Warszewiczii* in *L.-C. blechleyensis* is deep violet-purple, lighter towards the margin, and with a light base having thin yellowish lines.

LAELIO-CATTLEYA MARIUS.—Obtained by cross-



FIG. 82.—ROSE UNA WALLACE.

Gold Medal N.R.S., September 23, 1920 (see p. 173).

radiating as cordons, and the great majority of them have fruits hanging from end to end of the branches, some in such profusion as to require supporting by stakes. In many cases the crop had already been gathered, but there still remains a hountiful harvest on the trees of *Sure Crop*, *Alfriston*, *Lord Burghley*, *Rival*, *Endsleigh Beauty*, *American Mother*, *Northern Greening*, *Lord Hindlip*, *Wagner* and others.

Equally satisfactory is the plantation of autumn-fruiting Raspberries. The canes are in many cases weighed down with berries, and there is evidence in the number of green ones that the crop will be available for some weeks. This autumn the variety *Queen Alexandra* has proved superior to all others.

ing *L.-C. luminosa* (C. Dowiana × *L. tenebrosa*) and *C. Rhoda* var. *The Jewel* (*Hardyana* × *Iris*), this hybrid has sepals and petals bright copper-orange tinged with rose, and a well-displayed ruby-crimson lip with gold lines and disc. The form is nearest to *C. Rhoda*.

LAELIO-CATTLEYA SOLON.—Raised from *L.-C. C. G. Roebing* var. *Violetta* (C. Gaskelliana × *L. purpurata*) × *C. Dowiana aurea*, and of medium size in its first flower, this novelty has white sepals and petals and bright purple lip, with gold lines from the base.

A good flower of the new *L.-C. Butleri*, and a pretty form of *C. Lord Rothschild* were also sent by Mr. Butler from his interesting collection at Southfield.

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire

Peaches and Nectarines.—Every attention should be given these trees out-of-doors to hasten the ripening of the wood. All superfluous growths should be cut away promptly to allow the sunshine to reach the young fruiting wood. Some of the early trees will soon be shedding their foliage, but I do not advocate hastening defoliation. Should the borders be dry, watering will be necessary as the roots are still active, and a check at this season would react injuriously on the buds, which are now maturing.

Grease Banding.—This important work should be put in hand at once in order to trap the wingless females of the winter moth. Grease bands should be securely fastened around the trunks of the trees and all stakes that are used as supports. Rough bark that prevents the band from fitting closely to the tree should be removed. Examine the bands occasionally, and apply fresh grease as the old grease becomes dry.

Bush Fruits.—Such small fruits as Red and White Currants and Gooseberries are often improved by lifting and transplanting the bushes more frequently than some growers deem it advisable. Trees that have been planted from three to four years may be lifted successfully and replanted in ground specially prepared for them. Where insufficient space does not permit of the ground being dug and manured in advance the bushes may be heeled in a trench to protect the roots from drying winds. The ground should then be deeply trenched, working in farmyard or stable manure. Before replanting, wait until the ground is in a fit condition for receiving the trees and choose a fine day for the work. Shake some of the fine soil amongst the roots and make the ground firm by treading lightly around each tree. Black Currants may be transplanted, but it is better to renew the stock frequently with young, clean bushes. I also strongly advise the making of fresh plantations of summer fruiting Raspberries. The practice here is to replant two rows each year and destroy two of those that have become exhausted; by this method a good supply of fruit is obtained. For these plants it is necessary to trench the ground deeply and add plenty of stable manure; where the soil is of a heavy nature, leaf-mould worked in near the surface will assist the young plants considerably to develop new roots and build up strong canes for fruiting the following season.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAUGH, Esq.,
Castleford, Chapstow.

Bollea, Pescatorea, and Warscewiczella.—These Orchids were formerly included in the genus *Zygopetalum*, but they are quite distinct, having no pseudo-bulbs, neither are they so easily cultivated as *Z. Mackayi* and its allies. The plants are now forming new roots, and, where necessary, repotting or top-dressing may be done. The compost should consist of chopped Sphagnum-moss and fibrous peat in equal proportions, with a moderate sprinkling of crushed crocks and charcoal intermixed. The plants may be grown in teak-wood baskets or pans, which should be filled one-half their depth with drainage material. Frequent disturbance of the roots is not advisable, but when repotting becomes a necessity, it must be done carefully in order not to injure the fleshy roots. Top-dressings of living Sphagnum-moss may be applied more frequently, in fact at any time when the old moss begins to die off or turn

sour. The most important factor in growing these plants successfully is to place them in the most suitable part of the house, which can only be ascertained by moving them to different positions from time to time. Once they begin to thrive, it will be advisable to leave them alone. As a rule these Orchids should be arranged in a shady part at the warmer end of the Phalaenopsis house, where the temperature is kept as equable as possible. Some growers plunge the pots in moss, a method to be followed, for the roots will be kept moist, and, moreover, the immediate damp surroundings will discourage the spread of red spider. Afford water with extra care, for, although the roots should never become dry, the other extreme should be avoided. Through the spring and summer light sprayings of tepid water overhead are beneficial, but they should be given sufficiently early in the day for the foliage to dry before night. At this season spraying should be discontinued. Thrips occasionally attack the young shoots, and measures must be taken to destroy these pests directly they are noticed.

Paphinia.—This is a small genus of low-growing plants, two of which are occasionally seen in cultivation. Both *P. rugosa* and *P. cristata* should be grown in small pans filled one-half of their depth with drainage material. The pans should have wire handles attached before repotting is begun, for suspending them from the roof-rafters of the warm division. The rooting-medium should consist of good quality peat, chopped Sphagnum-moss, and partly-decayed Beech leaves, in equal parts, with a sprinkling of sharp sand added. A shaded part of the warm-house should be chosen for these plants during their period of active growth, the heat and moisture of that structure suiting them admirably. When the new pseudo-bulbs are fully developed, water the roots sparingly.

THE FLOWER GARDEN.

By SIDNEY LEGO, Gardener to the Dowager Lady
NUNBURNHOLME, Warter Priory, Yorkshire.

Spring Bedding.—The summer display of bedding plants is now over in some localities and the beds may be cleared and prepared for the reception of spring-flowering subjects. For retentive soils, bone meal is preferable to manure at this season and will meet general requirements. Choose dry weather for planting. Unedged beds of large, plain design are the best for spring bedding; these should be raised at the sides from 12 to 20 inches and slightly inclined to the centre. The sides of the beds may each be differently and effectively furnished with dwarf or spreading subjects such as *Arabis*, *Aubrietia* and *Daisy*; whilst *Scilla siberica* and other dwarf bulbous species may be used in conjunction. In planting, permit the plants which furnish the bed sides to encroach on the bed at certain points to break up straight lines. By the skilful use of *Daisies*, *Scillas*, *Aubrietias* and *Tulips*, a raised, oval bed may be made to represent a beautiful basket. *Alyssum saxatile*, *Myosotis*, *Viola*, *Silene*, *Polyanthus* and *Cheiranthus* are all suitable for planting, and bulbs in variety may be employed effectively with them. Standards of *Azalea sinense* and other hard-wooded species—grown in pots—may be plunged sparingly in the beds to assist the scheme.

Early-flowering Gladiolus.—Members of the dwarf section of *Gladiolus* are useful for supplying spikes as cut blooms, and very little trouble will be necessary to produce flowers between the blooming of forced bulbs and those grown in the open. Prepare frames, by placing a good layer of coarse cinders at the base, and form beds 15 inches deep with a compost consisting of loam, leaf-mould and sand in about equal proportions. Plant the bulbs 4 inches deep and 2 inches apart. Maintain a constant circulation of air in the frame, except during times of severe frost. Withhold water until growth is evident, and remove the lights entirely in April.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Ludgfield, Surrey.

Vineries.—It is essential, in the forcing of Grapes, that both the vines and the houses are free from insect pests. The pruning and cleansing of fruit houses will now be general with the exception of the latest houses. The inexperienced should avoid strong insecticides and mixtures of tar, etc., which often injure the vines and do not destroy all the insects, especially mealy bug and red spider. There are few better or safer insecticides for use than Gishurst compound. The cleansing of the vines themselves is not the most difficult business, as mealy bug harbours in the roof, trellis and loose parts of the border, where it is most difficult to eradicate. The work of extermination has only commenced when the vines and houses have been washed, and the walls coated with hot lime and sulphur. If the winter dressing is followed in the spring by daily attention with a small brush and methylated spirits from the time the vines break, success will be assured. If only a few bunches remain in the succession house these should now be cleared to economise labour and fuel and to allow the vines a rest before they are pruned. Most thin-skinned Grapes will now keep as well in bottles in a store as on the vines.

Muscat Grapes.—The berries of Muscat Grapes are now ripe and well coloured. Guard against an excess of fire-heat, at the same time see that injury is not caused by damp, to which the berries are liable during the fall of the leaves. A gentle warmth in the pipes, with a moderate circulation of air, on fine days, will obviate damp and keep the berries fresh and plump.

Late Vineries.—If Lady Downes or other thick-skinned Grapes are not well finished, keep the pipes sufficiently warm to justify a steady circulation of fresh, warm air, taking care to prevent sudden fluctuations of temperature. The surface roots may be watered moderately with water at a temperature of 80° on a fine, bright morning. Afterwards use a little fire-heat. Houses containing Grapes that are well finished should be kept fairly dry and warm. If late laterals are still growing, these should be pinched back, as they keep the roots in action and retard the ripening of the premier leaves.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe
Castle, near Cardiff.

Chicory.—A few roots of Chicory should now be lifted with as much soil adhering to them as possible, and started into growth to provide an early supply of salading. A cool shed and complete darkness are required to produce the best results, as hurried forcing by means of fire-heat has a tendency to make the blanched leaves tough. After removing all leaves except the short ones forming the centre, place the roots in a deep box and tightly pack light soil around them. Provided the plants and soil are in a moist condition, water will not be required for some time to come, but moisture must be carefully supplied before the plants show signs of flagging.

Globe Artichokes.—Preparation should be made to protect these plants from frost. Cut out the flower stems, remove some of the largest leaves on the outside of the plants, and place long, strawy litter around the clumps. The ground between should be dug and left tidy. If strong suckers are removed and potted now, they will winter safely in a cold frame. This young stock will be available for planting next April, should frost cause the loss of older plants; or they may be planted to provide a crop in succession to the established hed.

Mushrooms.—Successional beds should be made in the Mushroom-house, as material in sufficient quantity can be prepared for the purpose. A moist atmosphere and even tempera-

ture of 55° should be provided, conditions which the addition of new beds will assist in maintaining without the use of fire-heat, which is undesirable at this time of year.

Leeks.—Late-planted Leeks will continue to make vigorous growth for some time to come. Those growing in the open should have the ground deeply stirred, and, later, soil drawn up to the stems to blanch them.

Seed-saving.—Those who make it a practice to save seed from special stocks of vegetables will notice that the pods are ripening much later than usual. Where the seed-crops can be given the protection of temporary overhead lights, this should be provided, especially in the case of Onions and Leeks, as rain and dew quickly spoil the germinating power of these seeds. Beans should be dried hard before storing them for winter.

Preparations for Forcing.—Pits required for this purpose should be cleared of their contents and made ready for use. A thorough cleansing is desirable, and is best done by burning sulphur in them where it is safe to do so; afterwards lime-wash the walls throughout. Leaves of Beech and Oak should be collected in quantity and stored where they will be available for making hot-beds, as the latter will shortly be required for the early forcing of Asparagus, Potatoes, etc. Old soil from the forcing-houses and potting-shed should be stored under cover to have it in a condition for use at any time.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Cannas.—Plants that have been grown in pots should now be stored for the winter. They may, if necessary, be turned out of their pots, and packed closely together in a frost-proof building. A certain amount of moisture is necessary to enable them to come through the winter successfully. Therefore they should not be—as is often the case—stored under stages in close proximity to the water pipes.

Tuberous-rooted Begonias.—As the foliage dies down, these plants should be kept dry, and may be stored in their pots in a dry, frost-proof shed. If the pots are required, or storage space is a consideration, they may be shaken out and stored in boxes of dry sand. Other tuberous-rooted subjects, such as Caladiums, Gloxinias, Gloriosas and Achimenes, may be stored in this way. A word of caution is necessary in respect to tropical subjects, for, although dry and at rest, they would suffer injury if kept in a temperature lower than 45° to 50°. On the contrary, I find that Hippeastrums, if stored dry in their pots, take no harm in a temperature of 40°.

Erythras, Crinums, Agapanthus and Fuchsias will winter quite well in any dry shed where they are safe from frost.

Propagation.—Space in plant houses in winter is generally limited, but much may be gained in this respect by propagating young stock, instead of keeping old and large stock plants through the winter. A few pots of young stock plants generally winter better and provide healthier plants for spring propagation. If not already done, no time should be lost in propagating young stock during the present month. The foregoing remarks apply to such subjects as Coleus, Acalyphas, Graptophyllums, Pileas; in fact, nearly all the soft, ornamental foliage plants that are usually propagated by means of cuttings.

Forcing Bulbs.—There is still time to pot bulbs for forcing, but, if possible, the potting should be finished this month, for the longer time the bulbs have to make plenty of roots the more successful will the results be. Bulbs potted early, as advised in a former calendar, should be examined from time to time, and, where signs of growth are visible, removed from the bed of ashes, or whatever material they are covered with, and placed in cold frames.

FRUIT REGISTER.

APPLE ST. EVERARD.

I AGREE with Mr. Chapman (see p. 147) in his opinion of the value of this early Apple. I would prefer to call it a second-early sort, coming in after such varieties as Gladstone, Irish Peach, Langley Pippin and Beauty of Bath. St. Everard appears to crop freely, even in this season of scarcity. I have a goodly number of clean, moderately-sized fruit of most excellent flavour. I know of no other Apple that has more of the flavour of Cox's Orange Pippin than St. Everard. E. M.

APPLE PEERLESS.

THE new culinary Apple, illustrated natural size in Fig. 83, received the R.H.S. Award of Merit on August 24 last. It was raised by Messrs. Laxton Bros., who sent a tree to Wisley for trial with existing varieties. We saw the tree on the 29th ultimo, but the crop had been gathered. It is a bush specimen and makes robust growth, but the habit is somewhat spreading. In many respects the variety re-

NOTICES OF BOOKS.

Culinary Herbs.

FOLLOWING a table of contents and plant list, the author of this work* proceeds to define sweet or culinary herbs, and thinks the former adjective the more appropriate to distinguish the herbs from vegetables proper, or potherbs. Sweet herbs is a fairly comprehensive term, but few people would regard Rue as sweet, and in this country it might be relegated to the medicinal department as a febrifuge and germicide. The word "official" is not a very correct one, whether used as an adjective or a noun, in reference to plant medicines prepared to be sold in an apothecary's shop. The proper word is official. *Anthriscus Cerefolium* would be more up to date as a name for Chervil than *Scandix Cerefolium*. The author and her assistant might, with advantage, have employed a competent reader to check printers' errors and thus relieve them in their multifarious duties, which must be considerable, judging from the list of pamphlets they have written on medicinal herbs, and en-



FIG. 83.—APPLE PEERLESS: A LATE CULINARY VARIETY.

sembles Ecklinville Seedling, and the fruits have the characteristic dots of that variety. The season for this new Apple extends to Christmas.

APPLE JAMES LAWSON.

WE have received fruits of this new dessert Apple from the raiser, Mr. James Lawson, who gained the R.H.S. Award of Merit for the variety, on September 24, 1918; it was illustrated in *Gardeners' Chronicle*, November 23, 1918, Fig. 81. It is a cross between Gravenstein and Cellini, and is a very handsome Apple. Many of the fruits sent were coloured rich red over the whole surface, with deeper streaks; others were paler, with a red flush striped with deeper red. The flesh is firm, juicy and of good flavour. Mr. Lawson informs us that the tree crops well.

PEAR THOMPSONS.

THIS November Pear may be considered as one of the finest sorts in cultivation, yet it is neglected by most growers. Those who intend to plant Pears this autumn should include a tree or two of Thompsons, especially if their gardens are situated in large towns, for the tree is very hardy and an excellent bearer under any conditions. T.

closed with this book. Instances of printers' errors are "paopagation" for propagation, Garum for Carum, while of the heading for the article on Fennel, more than half has been omitted. On the other hand, articles on cultivation, propagation, harvesting, drying and storing are excellent. Historical and allied matters are interesting, including the reference to Angelica, which has grown for so many years in Lincoln's Inn Fields and other London squares. It also sows itself along the banks of the Thames. The various recipes for herb dinners, summer drinks prepared with sweet herbs, and the various ways of using Angelica, Chives, Parsley, Sage, Thyme, etc., so fully described in the book, would interest and enlighten many a housewife and cook, more especially if time would permit them to put the information into practice. Those who keep herbs for sale would also profit by studying and practising the proper methods of storing to keep them clean.

* *Culinary Herbs: How to Grow and Where to Sell, with an account of their Uses and History.* By Mrs. M. Grieve, F.R.H.S., Principal of the Whins Medical Herb School and Farm, Chalfont St. Peter, Bucks. Price 2s. 6d. post free, to members; 3s., post free, to non-members.

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SPORTS AND VARIETIES OF TREES :

A NEW SPORT OF THE LIME TREE.

AS is well known, there are many forms of trees in cultivation which are not identical with true species. The latter comprise masses of individuals all alike in character, occurring in the wild state over a definite region of the earth's surface. Geographical varieties are subdivisions of species, differing from one another in only one or two characters, instead of many characters, but like species definitely distributed over a distinct territory. The difference between a true species and a geographical variety is scarcely logical, and is a matter of words only. Thus, the Austrian and Corsican Pines may be regarded either as two distinct species or as two varieties of one species. Inside a species there may be races, namely, varieties which do not differ appreciably in anatomical features but are distinct physiologically. In the widely distributed *Pinus sylvestris*, the Scots Pine, there are distinct races, which behave differently in various ways, as in the time of opening the leaves, ripening the seed, habit, etc. It will be noticed that species, varieties and races, as defined above, are all capable of holding their own in the struggle for existence, and may be spoken of as "natural" groups.

Sports are entirely different, and form a distinct category in the world of trees. A sport is usually a solitary phenomenon, arising either as a sporadic seedling from a single seed, or developing out of a bud on a tree, as a single branch with some peculiarity of twig or leaf. A sport then is a freak of unknown causation, not forming the starting point of a new species, as is believed by some evolutionists, but speedily becoming extinct if left to nature. All the sports in trees are plainly cases of misdirected development; something has gone wrong in the ovule or bud. Many sports are due to arrested development. The tree in its course from birth to old age passes through stages which are comparable to those of an insect; the seedling often differs from the adult form as a larva does from a butterfly. The juvenile Ash seedling has simple leaves. The sport known as the One-Leaf Ash is simply a seedling Ash which has never progressed to maturity, and may be called a persistent larval form. The Irish Yew was found in 1767 as a solitary seedling on a mountain in Fermanagh and is characterised by all the branches being

directed vertically and all the leaves spreading radially. This is also the seedling stage preserved. The seedling of the Yew is unbranched in its first year, producing only a leading shoot. In fastigate trees, like the Irish Yew, no true branches are ever produced, the apparent "branches" being merely reduplications of the leading shoot, of which they preserve the direction and the characteristic foliage. In the Fastigate Oak the leaves are different from those of the normal tree being similar to those borne by leading shoots, and unlike leaves borne on lateral branches.

Sports, which are of no significance in nature, are often of interest to man, who cultivates them for use or ornament. They are propagated by grafts, layers or cuttings, though, in rare cases, they may be propagated by seeds. Many sports are of great economic value, as seedless fruits like the Bauana, which are plainly of

occurring high up and obscured by other branches, bears leaves which are "entirely white in colour" (see Fig. 84). The sport does not start from the main trunk, but from a branch about 10 feet out from the trunk, forming a fan-shaped expanse about 10 feet across. The branch is $6\frac{1}{2}$ inches in girth where it starts to bear the abnormal leaves. A careful examination reveals an odd leaf, perhaps one in a hundred, which has a small patch of green; but the great mass of the leaves is apparently "entirely white." Four of these leaves triturated and treated with alcohol yielded a pale-green solution, which showed plainly the chlorophyll absorption bands. Comparison of this colour with a solution of the normal leaves showed that the chlorophyll in the white leaves is less than five per cent. of the quantity present in the normal leaves. There is, however,



FIG. 84.—FOLIAGE OF THE COMMON LIME AND OF THE WHITE LEAVED SPORT, *TILIA VULGARIS* VAR. *CANDIDA*.

no value in nature. Amongst trees sports are usually bizarre, and seldom useful; but many are ornamental, particularly those with variegated foliage.

Amongst the sports which are particularly beautiful in this respect are the Silver Holly (var. *argentea regina*), which has pure white leaves. There are similar sports in the French Elm (*Ulmus nitens*) and the English Elm (*U. campestris*). Two Silver English Elms in Kew Gardens are above 50 feet high. In the case of the Lime, the only forms with coloured leaves hitherto known are: *Tilia cordata*, var. *aureo-variegata*, Schneider, a sport of the small-leaved Lime, with yellow-spotted leaves; and *Tilia sublanata* var. *variegata*, Szy., a sport of a form of the common Lime (*T. vulgaris*), also with yellow-spotted leaves. There is a tree of the latter kind, about 40 years old, in Kew Gardens, which displays no beauty and can only be looked upon as a curiosity.

I have now to record a sport of the common Lime (*Tilia vulgaris*), which was noticed last August by Mr. G. E. Mooney at The Doon, Athlone. On an old tree, a single branch,

probably enough chlorophyll present to enable the branch to survive, and grafts of it to live. Mr. Mooney intends to propagate this sport, which will undoubtedly form a handsome and novel tree. It may be named *Tilia vulgaris*, var. *candida*, A. Henry. With this name, it will not be confused with *Tilia alba* or *Tilia argentea*, names given to the well-known species of south-eastern Europe, which has leaves white underneath, due to a dense coating of white wool. A. Henry.

VEGETABLES.

PEA EDWIN BECKETT.

NOT only is this variety considered to be one of the best of marrow-fat Peas for an early crop on account of its high quality, quick growth, and freedom in bearing, but it is recognised as one of the best of late varieties. The reason of this is the rapid manner in which it grows and develops its pods, which usually are filled with eight or nine large, succulent Peas. In height it grows about 6 feet or a trifle less, according to cultural conditions. E. M.

TREES AND SHRUBS.

HYBRID BUDDLEIAS.

DURING several years prior to the war I tried to persuade *Buddleia variabilis* *magnifica* and *B. globosa* to flower simultaneously, so that I might cross them, but in this effort I was unsuccessful. I rejoined the Army at the beginning of the war, but on one occasion, while on week-end leave, I found, to my great delight, two ball-shaped heads of flowers on *B. globosa*. One of these heads of flowers I crossed with *B. v. magnifica* and the other with *B. madagascariensis*. The resulting seeds were collected and sown and I saw the plants therefrom in flower while on leave from France. They all produced spikes of ball-like heads of bloom, coloured greyish white, tinted with violet. With one exception, all the flowers were fertile, and this exception was very much like the one shown by me at the Royal Horticultural Society's meeting of September 21. There was also one seedling which gave spikes of ball-like heads of yellowish-white, which produced very little seed. All the seedlings were autumn-flowering and bloomed later than *B. v. magnifica*; their foliage was very like that of *B. v. magnifica*, but the seed pods and seeds were like those of *B. globosa*. All the flowers were fragrant.

Seeds were collected from a greyish-white, violet-tinted seedling and sown. Among the resulting seedlings was the one shown on September 21, with buff-coloured flowers and named Golden Glow (see Fig. 85). There were others with grey flowers, violet flowers and yellowish flowers, borne on spikes, in ball-like clusters. But the majority of the seedlings had spikes like an inferior *B. v. magnifica*, the only difference being that some of them faded off to yellow, instead of to brown, as in the case of *B. v. magnifica*. The seedlings which approximated to the *B. v. magnifica* type were almost infertile, and some quite so. The few that produced seeds had pods one-third the length of those of *B. v. magnifica*, and the seeds had short, instead of long, wings. The yellowish-flowered variety of this generation is not very fertile and examples like the one exhibited are quite infertile. The blue-ball forms are moderately fertile, and the greyish-ball forms quite fertile. All the ball-flowered varieties have pods and seeds like those of *B. globosa*. All seedlings of this second generation are autumn-flowering, fragrant, and have leaves like those of *B. v. magnifica*. I have seedlings from the yellow, blue, grey and *magnifica*-like forms, in the second generation, but these have not yet flowered.

The cross between *B. globosa* and *B. madagascariensis* produced seedlings with spikes of orange-coloured balls, larger than those of *B. globosa*; they flowered earlier than the last named species and were scentless and infertile, except one, which gave two seed pods this year, and I have three seedlings just up. The seeds were like those of *B. madagascariensis*. All the seedlings from this cross have leaves of the *B. madagascariensis* type.

For horticultural purposes, I suggest the name of *Buddleia Weyeriana* for the hybrid between *B. globosa* and *B. v. magnifica*. One very interesting and, to me, curious point about this cross is the loss of colour in the first generation. I would have thought that a violet-flowered species crossed with a yellow-flowered one would have resulted in highly coloured progeny. *W. van de Weyer*, *Smedmore House, Corfe Castle, Dorset*.

PINUS LAMBERTIANA.

THE large tree of the Sugar Pine (about 65 feet in height) growing in the Pinetum, near the Water-lily Pond, at Kew, has this year produced its first cone. It is a by no means common tree in our parks and gardens; but numbers of notable specimens are growing in various parts of the country, the best known examples being at Arley Castle, Dropmore, Eastnor Castle, and Bicton. These trees produce

cones at intervals. Cylindrical in shape, they vary from 10 to 18 inches in length; wild specimens have been measured 21 inches long, and 3 to 4 inches in diameter.

Pinus Lambertiana was discovered and first introduced by Douglas in 1827. It is a native of Western North America, in California and Oregon, where at an elevation of 3,000 to 6,000 feet the trees grow in company with *Pinus ponderosa*, *Pseudotsuga Douglasii*, *Libocedrus decurrens*, *Abies Lowiana*, and *Picea Breweri-ana*. It is remarkable that the last named, a companion tree of the Siskiyou Mountain slopes, but generally at a higher elevation,

have done quite well in recent years and in nearly all gardens there are sheltered south and west walls or fences, and warm corners, where even if the younger growths suffer from cold, the plants soon recover in spring and flower as freely as ever in autumn.

E. floribunda is a native of Venezuela, Colombia, Ecuador, and Peru. It is an evergreen shrub, the young shoots slightly viscid, the leaves $1\frac{1}{2}$ to 4 inches long, and the pure white, fragrant flowers, $\frac{1}{2}$ inch in diameter, freely borne in terminal, compound, elongated panicles.

E. montevidensis is a native of South Brazil and Uruguay. This is also an evergreen, but



FIG. 85.—BUDDLEIA WEYERIANA VAR. GOLDEN GLOW.

should produce its first cones at Kew during the same season.

Pinus Lambertiana is a very tall Pine; native trees are said to vary from 100 feet to 250 feet in height. The Arley Castle specimen, approaching 100 feet, is probably the tallest in the country. The cones hanging from the tips of the branches give to the tree a curious aspect. This is very well illustrated in *Gard. Chron.*, 1885, I., p. 11, Fig. 1, accompanying a very interesting description of the tree by the late Sir Joseph Hooker.

WHITE-FLOWERED ESCALLONIAS.

Two *Escallonias* from South America, both with white blossoms, are very beautiful late summer and autumn-flowering shrubs. From this region we cannot expect them to pass unharmed through our coldest winters, but they

the shoots are not sticky, the leaves are smaller ($2\frac{1}{2}$ inches long), the white flowers are not fragrant, but rather larger than those of *E. floribunda* ($\frac{3}{4}$ inch), and borne in a flatter rounded inflorescence. The glandular teeth on the calyx lobes of this species are also an important character. *A. O.*

SPIRÆA ARBOREA GLABRATA.

WHEN I wrote the note on the above (see p. 133) I might have made the matter more clear by stating that Späth, of Berlin, introduced *S. arborea* to commerce. In other words, he listed it in his Catalogue for 1910-11, so that he must have had it soon after its introduction in 1907, to give him time to propagate it. Neither the type nor the variety were listed amongst the novelties of Messrs. J. Veitch and Sons for the years 1908-11. *J. F.*

NOTES FROM IRELAND.

SEPTEMBER passed out under the kindest conditions, doing much to atone for summer's shortcomings, if shortcomings they were, for growth was lavishly luxuriant. Rarely indeed has growth been more vigorous in tree, bush, plant, or herb of the field, after recovering from the cruel crippling of early May, which swept away the promise of an abundant fruit crop.

Notes and statistics on the fruit crops furnished to the *Gardeners' Chronicle* sum the hopelessness of such crops throughout our island, but there are exceptional cases in which both Apples and Pears are found in limited quantity, but whether sufficient to justify the Royal Dublin Society in asking a fruit section to the schedule of its winter show remains to be seen.

The Royal Horticultural Society of Ireland had compiled a schedule for a show to be run in conjunction with the Royal Dublin Society's winter show, to be held at Ballsbridge, Dublin, on November 30th, and December 1st, but in view of the state of the fruit crop, and because there seemed the possibility of incurring serious loss, it has withdrawn the schedule, and the Royal Dublin Society will run aloof.

The Dublin district having escaped that premature winter nip which usually visits it about September 22nd, and experiencing abnormally high day and night temperatures, our gardens are gay, and Dahlia plays a prominent part in the display. Dahlias were previously held back, but now they make a galaxy of beauty rarely seen so late in the season. At Messrs. Ramsay's Royal Nurseries, Ballsbridge, all sections, largely represented, are making a delightful display, but, perhaps, nowhere is the peculiarity of the season seen so strikingly in high floral effect as in the People's Gardens, Phoenix Park. Bedding there is at its best, and, critically considered, better than its best in pre-war days, and on more liberal lines.

During some brief wanderings in Wicklow, including a visit to Mount Usher, the Mecca of many pilgrims interested in hardy plants, and flowering shrubs in particular, I found but little sign of the sere and yellow leaf at the end of September. *En route* from Bray, the gateway, as it were, one comes under the witchery of Wicklow's majestic scenery and the glamour of a climate which allows Ivy-leaved Pelargoniums to cover the house fronts year in and year out, and Zonale varieties to form perennial bushes.

Now that the growing-season of the Potato is over, there is a good deal of difference of opinion on the quality and quantity of the crop. So far as the Dublin district is concerned, both rank high. At St. Helen's, Booterstown, there were heavy crops wholly free from disease, and that without any spraying. Similar instances could be quoted, but in all cases fresh ground and imported seed appear responsible for the immunity. It was a foregone conclusion that a good deal of spraying would be omitted, for last year, under happier growing conditions, so many who sprayed found themselves no better off than those who utterly neglected it, although, it must be added, the latter were chiefly small growers, including plotters, and it is these last who will probably incur loss this season, for neither fresh ground nor new seed come, as a rule, into their calculation.

Dublin district allotment gardens now include some 4,000 plots, but the quality of work and upkeep seems rather in inverse ratio to their increase, inasmuch as most areas have been more or less disfigured by rampant weed growth. This, however, is most noticeable where horticultural supervision has ceased. In one district on the south side of the city practical gardeners were appointed as instructors at the modest fee of 5s. for attending four hours on each area on Saturday afternoons; this year the supervision was suspended! *K. D.*

INTENSIVE CULTIVATION.*

(Concluded from p. 167.)

THE immediate object of the comparison is to show, however, that the difference between the closeness of colonisation of the two lands is accurately presented by the difference between the acreages amenable to intensive cultivation which by reason of soil must, however, always remain relatively larger in the Isle than in Rutland. Thus in Rutland the area under fruit is 204 acres, and in the Isle 7,126. If these areas and the workers thereon be deducted from the total arable land in the two districts, the respective agricultural populations in terms of 100 acres of arable become almost identical, viz. 6.7 for Rutland and 6.9 for the Isle. The difference of agricultural populations is measured by the area under intensive cultivation. The agricultural workers engaged on the 7,126 acres of fruit in the Isle of Ely are almost as numerous as those engaged in doing all the agricultural work of Rutland—say, about 2,000 as compared with 2,416.

It may of course be true that a chance word, a common soldier, a girl at the door of an inn, have changed, or almost changed, the fate of nations, but it is probable that the genius of peoples and the pressure of economic and social forces are more potent. Is there then, it may be asked, any indication that the people of this country will seek in intensive cultivation a means of colonising their own land rather than continue to export their surplus man-power? The problem is too complex and too subtle for me to solve, but I will conclude by citing a curious fact which may have real significance in indicating that if a nation so wills it may retain its surplus population on the land by adjusting the intensity of its cultivation to the density of its population. If a diagram be made combining the intensity of production of a given crop, e.g., the Potato, as grown in the chief industrial countries of the world, it will be found that the curve of production coincides closely with that of density of population.

	Density of Population per Square Mile.	Percentage of Population.	Percentage of Yield.	Yield in Tons per acre, less seed. Average 1911-13.
United States	31	10	33	1.3
France	193	62	56	2.2
Germany	311	100	100	3.3
U.K.	374	120	110	4.2
England and Wales	551	177	128	5
Belgium	658	212	155	6.04.

From these facts we may take comfort, for they indicate that as a population increases so does the intensity of its cultivation: the tide which flows into the towns may be made to ebb again into the country. The rate of return, however, must depend on many factors: the proclivities of the peoples, the relative attractiveness of urban and rural life and of life at home and abroad, but ultimately the settlement or non-settlement of the countryside must be determined by the degree of success of the average intensive cultivator. The abler man can command success; whether the man of average ability and industry can achieve it, will, I believe, depend ultimately on education. He can look for no assistance in the form of restricted imports. He must be prepared to face open competition. Wherefore he should receive all the help which the State can render; and the measure of success which he, and hence the State, achieves will be determined ultimately by the quality and kind of education which he is able to obtain.

* Presidential address by Professor Frederick Keeble, C.B.E., Sc.D., F.R.S., to the Agricultural Section, British Association for the Advancement of Science, Cardiff, 1920.

CULTURAL MEMORANDA.

NERINES AND OTHER USEFUL BULBS FOR THE GREENHOUSE.

As Nerines pass out of flower they should be placed in a light position near to the roof glass in a cool house. Established specimens in good condition at the roots require ample supplies of water when in active growth, and feeding with dilute liquid manure or soot water.

As a rule Nerines flower best when the pots are crowded with bulbs, thus, so long as the plants are in good condition at the roots it is unwise to repot them frequently. Repotting is best done during August or early September, just before the plants start into growth; on the contrary, if this has been neglected, and they are in bad condition, I would not hesitate to repot after they have started into growth. Whenever the work is done the plants require careful watering until they have made plenty of new roots. As regards flowering, *N. Bowdeni* is the most dependable, as it blooms freely every year; it is also not so truly deciduous as the other species, and therefore should not be dried off to the same extent. In the south it is hardly planted at the foot of a greenhouse wall; in such a position it increases freely and flowers in great profusion each year. It should be worth cultivating in quantity for supplying cut blooms, planted out in frames, or in beds in low pits.

Watsonia Meriana var. *Ardernei*, also known as *W. iridifolia* *alba* *O'Brienii*, is another Cape bulb that is worthy of more general cultivation. The tall, branching flower spikes grow some three to four feet high, and are charming as cut flowers, or for conservatory decoration. The corms should be potted as soon as they are received—but will take no harm if kept cool and dry until the spring. Thus, one may grow successive batches of the plant, placing four or five roots in a 6-in. pot. After potting, grow the plants in a cold frame or cool greenhouse. At no period of their growth do they require a higher temperature than that of an ordinary greenhouse. Plants of this class are of the greatest importance in these days of dear fuel.

In this connection *Bravoa geminiflora*, another cool-house bulb from Mexico, is worthy of consideration. Its orange-red, tubular flowers are produced very freely on stems some two feet long, which makes it a useful subject for the supply of cut flowers. It is quite happy in a compost of rich loam, leaf-mould and sand, and three bulbs may be grown in a 48-sized pot, or five in a six-inch pot. Like the *Watsonia* it grows and flowers freely out of doors during the summer in the southern counties, thus giving a succession to the plants grown indoors.

Spanish and English Irises are also useful subjects for cultivation in the cool greenhouse, and in their many beautiful varieties are very popular as cut flowers. They may be grown in pots, but where wanted in quantity are best cultivated in boxes. *Iris reticulata* is very charming grown in small pots, or in fibre in bowls. *Iris Susiana*, the "Mourning Iris," is worth growing in pots, as also are the hybrid *Regelia-cyclus* Irises, which can be depended on to flower freely. A few of the best varieties are *Calypso*, *Hera*, *Psyche*, *Charon*, *Saga* and *Pollux*. *J. C.*

HARDY FLOWER BORDER.

DIANTHUS ALLWOODII IN SCOTLAND.

SOMETIMES new flowers, which are a success in the south, do not give equal satisfaction in Scotland and the north of England, owing to the difference in the climate. It is satisfactory to know from various sources that the new hybrid Pinks raised by Messrs. Allwood Brothers, and distributed as *Dianthus Allwoodii*, are likely to prove as satisfactory in Scotland, even in the north, as they have done in the south. So satisfied are most of those who have tried them that they are adding to the number of varieties they cultivate. *S. A.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Green Manuring.—The recent reference to the value of green manuring is timely, as this form of assistance can be made most valuable to horticulture crops. In small gardens some difficulty will be experienced in putting this method into practice, because some time is required to grow the crop and this interferes with a rotation of vegetable crops. In agriculture green manuring has long been recognised as a valuable aid to the successful growth of crops, particularly cereals. The finest Wheat I saw this year was a field of 28 acres of the new variety Yeoman, the result of summer fallow and a full crop of white Mustard ploughed in at the end of September. Not a particle of animal manure was given, yet the result was most satisfactory in the growth of straw and promise of a satisfactory yield. Where wireworm is present in the soil, no doubt Mustard ploughed in has a deterrent effect on the ravages of these pests. The value of Mustard over many, or all other green crops noted, is the short space of time required to produce a full crop. Six weeks' growth is sufficient to enable the Mustard plant to reach a height of 2 feet, which is high enough for soiling. Some months elapse before full crops of other plants are obtained, notably Crimson Clover, *Trifolium incarnatum* or Vetches. Rye grows quickly; sown in September it would be ready to dig in in November or the following spring. Rape grows quickly when the cultivation is good and Turnip fly not troublesome; sown in July a full crop should be realised for autumn or spring manuring. Turnips, too, chopped in pieces, are valuable as a manure, and not an expensive crop to grow. Italian Rye Grass, sown thickly in August, should prove a good green manure crop if not allowed to go to seed before being buried. The smallholder will find White Mustard the most easily managed crop and one that will give the best results, taking into consideration the various periods at which it can be sown and its rapid growth. Mustard may be sown as early as the middle of April. E. M.

Fuchsias Hardy at Torquay.—I have been much interested to observe how far the various kinds of Fuchsias can be grown out of doors here. There are many of the superior pot varieties flourishing apparently in the open, just as the hardier kinds grow further north. They are found quite casually, and no one seems to have realised that a beautiful garden might be made by selecting and growing a few of the best. Of all the Fuchsias I have seen there is nothing so fine as the hardy *F. Riccartonii*. This grows into a shrub of some size with strong, woody stems and branches, and it bears a profusion of red flowers, not large and heavy, but solid, yet beautiful, and with a foliage setting of the neatest description. R. Irwin Lynch, F.M.H., Torquay.

Erigeron mucronatum.—Plants for a wall are often sought after, and *Erigeron mucronatum* is certainly one of the most suitable. It has a very slender and graceful habit of growth with small leaves and Daisy-like white flowers, darkening off to red with age. Even when self-sown it never becomes a weed. In height it usually attains a foot, and it is very suitable for the top of a wall, but often grows in sprays from the interstices. This is the plant that was very generally but erroneously known as *Vittadinia triloba*. R. Irwin Lynch, F.M.H.

A Potato Experiment.—As an experiment, I grew 12 sets of Sutton's Abundance Potato on a strip of garden land which last November was dressed with a solution of sulphuric acid; density 1 in 8 and 60 sp. g. emptied from electric battery cells. On the Potatoes from this soil not a trace of *Phytophthora infestans* is present, while, in the immediate vicinity, the crop is badly affected. The land is calcareous, open in texture and porous. S. J. Channing.

SOCIETIES.

ROYAL HORTICULTURAL.

TUESDAY, OCTOBER 5.—As the great fruit show was held on this occasion, there were no general exhibits, but the various committees met and considered the novelties set before them.

From the Wisley Gardens an extensive collection of Michaelmas Daisies was brought, and the varieties were greatly admired. *Lonicera pileata*, in fruit, was shown from the Cambridge Botanic Gardens. Mr. H. J. Elwes, Colesbourne, showed a set of Nerines, among which the salmon-hued Lady Louise Loder was one of the best. *Caliphurria subdentata*, with four flowers, from Peru, was also shown by Mr. Elwes, as probably identical with the presumed hybrid between *Eucharis* and *Urceolina*.

Floral Committee.

Present: Messrs. H. B. May (in the chair), E. A. Bowles, Reginald Cory, S. Morris, R. C. Notcutt, Geo. Harrow, John Heal, J. Jennings, C. R. Fielder, Andrew Ireland, Wm. Howe, J. F. McLeod, H. J. Jones, Arthur Turner, John Dickson, Chas. Dixon, Chas. E. Shea, H. R. Darlington, F. Page Roberts, W. P. Thomson,

Polygonum campanulatum (lichiangensis).—A distinct species which grows about three feet high and becomes a bushy specimen. The flowers are small, campanulate, borne in branching inflorescences, and they are white, tinted with pink. Mr. W. G. Baker informs us that a plant at Oxford has flowered continuously for three months. Shown by Messrs. B. LAFRAMS.

Aster Elsa.—A showy, free-flowering, double, soft blue variety. Shown by Mr. G. W. MILEK, Wisbech.

Aster Queen of the Lilacs.—A bold, strong-growing sort, with large, broad petals that appear to "cup" very slightly. The colour is clear lilac. Shown by the Hon. VICARY GIBBS (gr. Mr. Edwin Beckett), Aldenham House, Elstree.

Aster Grace Sweet.—A semi-double, large-flowered variety, with blooms of good form and substance. The colour is deep mauve blue. Shown by the Hon. VICARY GIBBS, Elstree.

Carnation Lord Lambourne.—This fine new scarlet, perpetual-flowering Carnation has large, substantial blooms. It was described and figured in *Gard. Chron.*, p. 129, Fig. 56. Shown by Messrs. STUART LOW AND Co., Enfield.

Carnation White Pearl.—A lovely, perpetual-

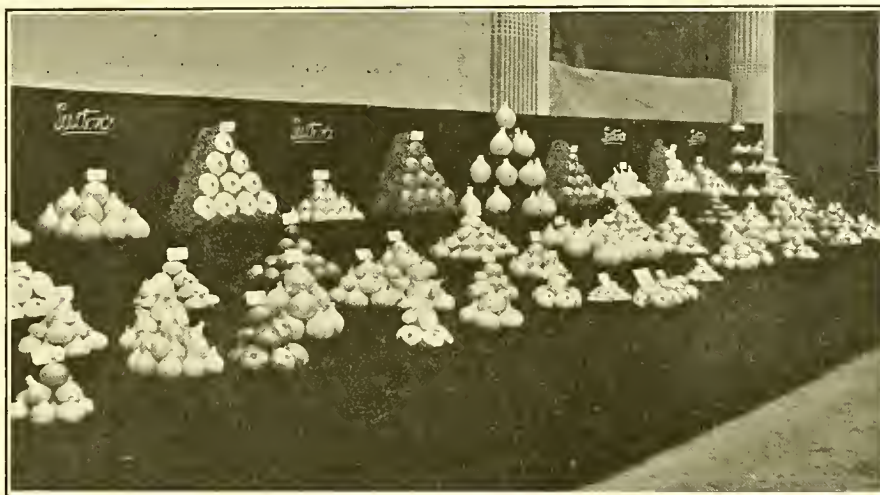


FIG. 86.—MESSRS. SUTTON AND SON'S GOLD MEDAL EXHIBIT OF ONIONS AT WESTMINSTER, SEPTEMBER 21, 1920.

J. W. Blakey, E. H. Jenkins, W. E. Baker, R. W. Wallace, Chas. E. Pearson, J. F. Bennett Poë, E. F. Hazelton and H. Cowley.

FIRST-CLASS CERTIFICATES.

Nerine Aurora.—Another splendid Nerine and a fine companion to *N. Hera*, described in our issue of September 25. *N. Aurora* has strong spikes of large, soft, deep pink blooms, which, individually, are very large and have broad segments. Like *N. Hera*, it is a giant, and the two may prove forerunners of a new and extremely vigorous race. Shown by Mr. J. ROSE, Oxford.

Columna gloriosa purpurea.—A handsome stove plant. The specimen exhibited was finely grown and had seven pendant flowering growths, each with from six to eleven large, hooded, scarlet, yellow marked flowers. The young growths have purplish leaves, hence the varietal name. Shown by Sir H. T. LEON (gr. Mr. W. W. Field), Bletchley Park, Bletchley.

AWARDS OF MERIT.

Chrysanthemum Pink Profusion.—This medium-sized, Japanese, early-flowering variety has shapely blooms of a clear, deep rose-pink shade. Shown by Mr. H. J. JONES, Rycroft Nursery, Lewisham.

Chrysanthemum Blanche du Poitou.—A useful large, early-flowering white variety. Shown by Messrs. W. WELLS AND Co., Merstham.

flowering variety, with blooms of extra large size, excellent form and substance and pure whiteness. The petals are fringed. A fine addition to the white sorts. Shown by Messrs. STUART LOW AND Co., Enfield.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Arthur Dye, E. R. Ashton, C. J. Lucas, Pantia Ralli, T. Armstrong, Chas. H. Curtis, H. G. Alexander, J. E. Shill, R. G. Thwaites, S. W. Flory, J. Cypher, R. A. Rolfe, J. Wilson Potter, and Fred K. Sander.

There were no groups of Orchids, but numbers of fine novelties were submitted for awards.

AWARDS.

FIRST-CLASS CERTIFICATES.

Brasso-Laelio-Cattleya Muriel magnifica (B.C. Madame Chas. Mason × *Laelio-Cattleya Feronia*), from W. R. FASEY, Esq., Holly Bush Hill, Snarebrook (Orchid grower Mr. E. J. Seymour). One of the largest, most beautiful and perfectly-formed flowers of its class. The sepals and petals are rose-pink; the lip is broad and slightly fringed, in colour rosy-mauve, with a large chrome yellow disc.

Phyllostachya Memoria Joseph Charlesworth (*Odontioda Brewii* × *Miltonia Charlesworthii*).

Shown by Messrs. CHARLESWORTH AND Co., and a fitting tribute to the departed head of the firm, who personally evolved this section of hybrids. In form it approaches *Miltonia*. The sepals and petals are deep maroon-crimson. The broadly ovate lip is rosy-crimson, with a yellow crest.

AWARDS OF MERIT.

Odontoglossum Dusky Queen (*Jasper* × *Aquitania*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook. A noble flower of perfect form and large in all its parts. The white ground is heavily and evenly blotched with dark mauve.

Odontoglossum Sir Harry Veitch (*Mars* × *Menier St. Vincent*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. A noble, new hybrid of a very rare type, the fine flowers, of very firm substance, being bright crimson-purple, with white tips and bases, the petals having a purple blotch on the white area at the base. The handsome lip is white with dark crimson blotches in front of the yellow crest. When perfectly developed, it will be a unique hybrid.

Odontoglossum Mrs. Jas. Wood (*Rex* × *crispum Perfection*), from Messrs. ARMSTRONG AND BROWN. The flower is of the largest size and of model form; it is white, with dark-red blotches on the inner two-thirds of the segments.

Cattleya The Prince (*Rhoda* × *Dowiana aurea*), from Messrs. FLORY AND BLACK, Slough. A glowing yellow flower, slightly tinged with red. The lip is crimson, with a showy yellow crest.

Brasso-Cattleya Rosita var. Harmony (*B.-C. Rene* × *C. Dowiana aurea*), from Messrs. FLORY AND BLACK. The sepals and petals are white; the lip is fringed, coloured rosy-mauve, with a yellow disc.

PRELIMINARY COMMENDATION.

Odontoglossum Emma (*Ashteadensis* × *crinum*), from PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes). A charming flower, forms of which have already been recorded in *Gard. Chron.* The sepals and petals are reddish-claret, with small white tips. The lip is white, with a claret blotch in front of the yellow crest.

OTHER EXHIBITS.

Baron BRUNO SCHRÖDER, The Dell Park, Englefield Green (gr. Mr. J. E. Shill), showed beautiful examples of cut flowers of his richly-coloured *Laelio-Cattleya Ivanhoe* (*L.-C. eximia* × *C. Dowiana aurea*).

THE DUKE OF MARLBOROUGH, Blenheim Palace (Orchid-grower Mr. Barker), showed *Laelio-Cattleya Ivanhoe* Blenheim variety, from a cross made with a white *L.-C. eximia*; the white flowers have a Tyrian purple front to the lip.

Sir HERBERT S. LEON, Bart., Bletchley Park (gr. Mr. W. W. Field), showed *Laelio-Cattleya Acis* (*C. Mendelii* × *L. tenebrosa*), *C. Mrs. Pitt* var. *Cicely*, the new *Cypripedium Barbara* (*Gaston Bulteel* × *Harri-Sander*), and finely-flowered *Dendrobium formosum giganteum* and *Epidendrum vitellinum*.

W. R. FASEY, Esq., Snaresbrook, exhibited the new *Brasso-Cattleya Lemon* (*B.-C. Mrs. J. Leemann* × *C. granulosa Schofieldiana*), a pretty, lemon-yellow flower with lip showing *C. granulosa*, but fringed.

Messrs. SANDERS, St. Albans, showed *Miltonia Redbreast*, of unrecorded parentage, a chaste, moonlight-white flower with vivid crimson mask to the lip.

Messrs. CHARLESWORTH sent the new *Odontonia Nydia* (*Miltonia Hyean* × *Odm. Harry-anum*), in which traces of the *Odontoglossum* parent had vanished. The flowers are white with pretty rose-purple markings on the inner halves of the lip.

PANTIA RALLI, Esq., showed a very promising form of his type of *Odontoglossum Promerens*.

Dahlia Committee.

Present: Messrs. H. B. May (in the chair), Joseph Cheal, J. A. Jarrett, H. J. Jones, D. B. Crane, E. H. Jenkins and Charles H. Curtis.

The following three varieties, from among several dozens, were selected for trial at Wisley:—

Mrs. H. J. Jones (BURRELL AND Co.), a giant, decorative variety of great beauty, with splendid, pale sulphur yellow blooms, the colour paling to cream towards the tips of the segments; *Selina* (BURRELL AND Co.), a miniature, Paeony-flowered variety, with deep crimson flowers; *Coronette* (BURRELL AND Co.), a rich, crimson scarlet collerette variety, with broad segments and a red, yellow-shaded collar.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), Geo. F. Tinley, H. S. Rivers, F. Jordan, P. C. M. Veitch, Ed. Beckett, W. Pope, S. B. Dicks, Geo. Kelf, A. W. Metcalfe, W. Crump, T. Coomber, H. Hooper, Owen Thomas, J. G. Weston, J. Udale, A. Bullock, H. Markham, J. S. Kelly, G. P. Berry, E. A. Bunyard, E. W. Roach, J. Harrison, W. Bates, Geo. Woodward, J. C. Allgrove, W. Poupart, W. H. Divers and John Basham.

AWARDS OF MERIT.

Apple Herring's Seedling.—A noble dessert Apple of large size and deeply coloured—more intensely on the exposed size, the rich yellow ground showing on the reverse. Specimens in Messrs. J. CHEAL AND SONS' exhibit were much more coloured than those shown for award by Messrs. J. R. PEARSON AND SONS. The fruit is about three inches tall, has a somewhat conical outline, and there are ridges about the deep eye, which is partly closed. The stalk is very short, and set in a deep cavity. The quality is first-rate; the season is said to be October to November.

Apple Tythby's Seedling.—This excellent Apple was described in *Gard. Chron.* November 22, 1919, when it received a provisional Award of Merit. The tree has recently been inspected by members of the Committee, who report that it is of vigorous growth, upright habit and crops freely. The foliage is said to be regularly oval in shape. The Award of Merit was confirmed. Shown by Messrs. CHIVERS, Histon.

GROUPS.

A Gold Medal was awarded to C. A. CAIN, Esq., The Node, Welwyn (gr. Mr. T. Pateman), for a collection of fruits including Grapes, Peaches, Pears, Apples, Plums, Bullaces and Nuts. The bunches of Appley Towers, Muscat of Alexandria and Alicante Grapes were especially fine, and there were excellent Pears of such sorts as *Beurré Hardy*, *Emile d'Heyst*, *St. Luke*, *Conference* and *Bellissime d'Hiver*. *Monarch* and *Golden Drop* Plums were excellent. There was also a very representative collection of culinary and dessert Apples.

A Gold Medal was also awarded to KIPPEN VINERY Co., Kippen, Stirlingshire, for Grapes. The bunches were exceedingly well finished, of large size and good shape. The following kinds were represented: Muscat of Alexandria, Alnwick Seedling, Gros Colmar, Diamond Jubilee and Pearson's Golden Queen.

Sir WM. CAIN, Bart., Walgrave Manor (gr. Mr. Moore), was awarded a Silver-gilt Knightian Medal for a collection of choice fruit, including Grapes, Peaches, Figs, Plums, Pears, Apples, Nuts and Raspberries.

Baskets and boxes of Apples, as packed for market by THE GUILDFORD FRUIT FARM, were awarded a Silver-gilt Knightian Medal.

A fruit of Rev. W. Wilks Apple, weighing 1 lb. 12 oz., and 16½ inches in circumference, was shown by Mrs. C. SAURER, Merlawe Abbey, Bourne End, Buckinghamshire (Silver Bank-sian Medal).

Competitive Fruit Classes.

COLLECTIONS OF DESSERT FRUITS.

In the premier class for a collection of ripe dessert fruits the chief award was won by LORD HILLINGDON (gr. Mr. J. Shelton), Wildernesse, Sevenoaks, with finely-coloured bunches of Muscat of Alexandria and Madresfield Court Grapes, Queen of the West Melon, Salway and Sea Eagle Peaches, Ribston Pippin and Cox's Orange Pippin Apples, Doyenné du Comice

Pears and Negro Largo Figs—a fine set. The 2nd prize was awarded to C. A. CAIN, Esq. (gr. Mr. T. Pateman), The Node, Welwyn, who had good Grapes, first-rate Durondeau and Doyenné du Comice Pears, but lost points on his Grapes and Nectarines.

G. MILLER, Esq. (gr. Mr. J. Kidd), Newberries, Radlett, won 1st prize for a collection of six dishes of ripe dessert fruits, and his set included handsome bunches of Muscat of Alexandria and Madresfield Court Grapes, Pitmaston Duchess Pears and Ribston Pippin Apples; 2nd Mrs. BARWELL (gr. Mr. W. Mould), Kirdford, Bartyold House, Kirdford, Billinghamhurst.

GRAPES.

The chief class was that for a collection of six distinct varieties, two bunches of each sort, and at least two varieties of white Grapes were required in each exhibit. Two excellent exhibits were forthcoming, the finer being shown by LORD HILLINGDON. Muscat of Alexandria was exceptionally fine, the large, finely finished berries being of a rich amber yellow. Those of Black Hamburg were large, shapely bunches of Sloe-black berries with a dense bloom. Madresfield Court was represented by long, narrow bunches of finely coloured berries. Mrs. Pearson, Mrs. Pince and Muscat Hamburg were also good. Second, G. MILLER, Esq., who had fine bunches of Lady Hutt, Appley Towers, Muscat of Alexandria, Alicante and Alnwick Seedling.

LORD HILLINGDON easily excelled in the class for Black Hamburg, his only competitor being Mrs. A. WILSON, Tranby Croft, Hull (gr. Mr. W. J. Earl), who was awarded the 2nd prize. Four competed in the class for Mrs. Pince, and again LORD HILLINGDON won easily, his bunches being far superior to the others; 2nd G. MILLER, Esq.

The competition in the class for the large bunches Alicante variety was restricted to three, and again LORD HILLINGDON excelled, but Mr. J. LOCK, Oatlands Lodge Gardens, was not far behind, his berries being a little less finished. Three competed in the class for the popular Madresfield Court variety, and LORD HILLINGDON was worthily awarded 1st prize; 2nd, Mrs. A. WILSON.

Very large bunches of the Prince of Wales variety were awarded the 1st prize, but the berries were not so finely finished as could be wished in this large-berried Grape. The exhibitor was G. MAYER, Esq., Whistlers Wood, Woldingham (gr. Mr. W. Sayers); Sir Caterham (gr. Mr. W. Lintott), was awarded the 2nd prize. The last-named was awarded the 2nd prize. The last-named was placed first in the class for any other black Grape with Lady Downe's Seedling, and LORD HILLINGDON was 2nd with Muscat Hamburg.

Six exhibits were forthcoming in the class for two bunches of Muscat of Alexandria, and Mr. J. LOCK, Oatlands Lodge Gardens, Weybridge, was awarded the 1st prize, his bunches being beautifully finished and of model shape; 2nd, G. MAYER, Esq. For any other white Grape the 1st prize was awarded to C. A. CAIN, Esq., for Lady Hutt; 2nd, Mrs. Pearson, shown by LORD HILLINGDON.

TRADE COLLECTIONS.

The two exhibits of 30-feet area of tabling, double width, were admirably characteristic of the best Apples and Pears as grown in this country; indeed, it would be difficult to imagine any better grown elsewhere.

The first prize was won by Messrs. GEORGE BUNYARD AND Co., LTD., whose exhibit was characterised by good form and beautiful colour. The most brilliant Apples were Ben's Red Wagener, Bosbery Pippin, Foster's Seedling, and Baumann's Red Winter Reinette. Rich golden colour was provided by Golden Spire, Grenadier and Golden Noble, while the delicate flushing on such sorts as Royal Jubilee, Lord Derby and Stone's Apples was equally attractive. Boxes of excellent Peasgood's Nonsuch, Mère de Ménage, Crimson Bramley and The Queen Apples, excited much deserved admiration. Amongst the Pears, Conference, Fondant de Thiriot, Catillac, Durondeau, Beurré Alexander Lucas, Beurre Van Geert and immense

ruits of Pitmaston Duchess were particularly prominent.

Messrs. W. SEABROOK AND SONS were second, and their collection was of particularly even merit. Nearly all the fruits were of moderate size, but of excellent finish. The very best Apples were King of the Pippins, The Queen, Blenheim Pippin, Peasgood's Nonsuch, Gascoyne's Scarlet, Rival, Fearn's Pippin, Swedish Reinette and Excelsa, the last named being a new sort of most attractive appearance. Chief of the Pears were Marie Louise d'Uccle, Beurré Clairgeau, Beurré Diel and Brockhurst Park.

Competition was much stronger in the smaller class, for a collection on 20-ft. run of tabling. The 1st prize was won by THE BARHAM NURSERIES, LTD., with probably the best coloured Apples ever exhibited at the Society's fruit show. Such sorts as King of the Pippins, Rival, Christmas Pearmain, Worcester Pearmain, Ben's Red, Charles Ross and James Grieve were wondrously beautiful. Unfortunately, only a few Pears were included, but the fruiting sprays of Berberis Wilsonae, interspersed with the dishes of Apples, and the fruitful branches of Raspberry October Red, at the end, added much to the attractions of the Apples.

Messrs. S. BIDE AND SONS, LTD., were second, and their method of arrangement was distinctly the most successful in the two large classes. The baskets and dishes of fruit were set out in three tiers decorated with Berberies, Asparagus Sprengeri, leaves of Ampelopsis and small Palms in Bamboo vases. The fruit consisted solely of Apples, but they were of splendid quality. The predominant sorts were Rival, Duchess's Favourite, Coronation The Houblon, Charles Ross, Worcester Pearmain, Tyler's Kernel, Paroquet and Wealthy.

Messrs. J. CHEAL AND SONS were third, and they showed particularly good examples of Rev. W. Wilks, Warner's King, Incomparable, Gascoyne's Scarlet and Herring's Pippin Apples. Messrs. S. SPOONER AND SONS, who were awarded fourth prize, included Bellissime d' Hiver Pears, Black Bullace and Shepherd's Bullace.

MARKET GROWERS' CLASSES.

Lt.-Col. H. LUMLEY-WEBB, Upchurch, Kent, was the only market grower to show twelve baskets of cooking and dessert Apples, and he was awarded the 1st prize for an excellent display. Not only were all the sorts of splendid quality, but the baskets were attractively arranged. Most prominent of the dessert sorts were Ben's Red, King of the Pippins and Ribston Pippin, while the outstanding baskets of cookers were Mère de Ménage, Bramley's Seedling and Bismarck.

AMATEURS' HARDY FRUITS.

The only collection of hardy fruits in the Amateurs' Division was by C. A. CAIN, Esq., The Node, Welwyn, Herts., and with it his gardener, Mr. T. Pateman, fully sustained his reputation as a cultivator and exhibitor of high-class fruit. Except that it did not contain Medlars or Raspberries, it was fairly characteristic of the fruits that may profitably be grown in this country. Besides almost perfect Apples and Pears, there were dishes of Humboldt Nectarines, Sea Eagle Peach, Coe's Golden Drop, President and Monarch Plums, Morello Cherries, Mulberries, Red Currants and Filberts.

COLLECTION OF APPLES AND PEARS.

As in the amateurs' collection of hardy fruit, so in the class for 24 dishes of Apples, C. A. CAIN, Esq., was alone, but he had a splendid exhibit fully worthy of the 1st prize awarded to it. Of the light dessert sorts, the very best were King of Tomkin's County, Charles Ross and Rival while Gascoyne's Scarlet, Cox's Pomona, Emperor Alexander and Peasgood's Nonsuch were splendid amongst the culinary sorts.

Competition was good in the class for 12 dishes of Apples. Here Mr. R. STAWARD, Panshanger Gardens, Hertford, was 1st with a magnificent collection. His dishes of Rival, Gascoyne's Scarlet, Charles Ross and Peasgood's

Nonsuch were perfect; 2nd, G. MILLER, Esq., Newberries, Radlett (gr. Mr. J. Kidd), who had specially good dishes of Peasgood's Nonsuch and Rev. W. Wilks.

C. A. CAIN, Esq., was decidedly the better of the two exhibitors of six dishes of cooking Apples, and his examples of The Queen and Peasgood's Nonsuch were very fine; 2nd, F. MOOR, Esq., Wimbledon Park. C. A. CAIN, Esq., also won 1st prize for six dishes of dessert Apples, showing beautifully coloured fruits of ideal size; 2nd, Sir WM. E. CAIN, Wargrave Manor, Wargrave (gr. Mr. C. Moore), who had highly coloured Paroquet.

The two exhibits of Pears in the class for 18 dishes made quite a creditable show. The fruits were clean, of good size and typical shape. The 1st prize was won by Sir GEORGE W. TRUSCOTT, Oakleigh, East Grinstead (gr. Mr. F. Booker), who had ripe dishes of Louise Bonne of Jersey, Doyenné Boussoch, Marguerite Marillat, Durondeau and Princess; 2nd, C. A. CAIN, Esq., who showed a few examples of Pitmaston Duchess, Conference and Charles Ernest.

LORD HILLINGTON, The Wilderness, Sevenoaks (gr. Mr. J. Shelton), had the best nine dishes of dessert Pears, in which he included excellent examples of Pitmaston Duchess, Beurré Alexander Lucas and Durondeau; 2nd, Mr. J. MILLER.

PLUMS AND CHERRIES.

At this, the end of the season, the two exhibits of Plums were very good. C. H. COMBE, Esq., Cobham Park, Surrey (gr. Mr. G. A. Kemble) was first, with Coe's Golden Drop, Coe's Violet and President; 2nd, J. A. BERNERS, Esq., Woolverstone Park, Ipswich (gr. Mr. W. Messenger).

There were no Damsons or Morello Cherries, but three dishes of autumn Raspberries were forthcoming, and of these the best was Hailsham-berry, shown by F. C. STORP, Esq., West Hall, Byfleet (gr. Mr. G. Carpenter).

THE COUNTY CLASSES.

Classes were arranged for competition amongst growers in various districts of the British Isles. In each division there were classes for six dishes of Apples, four to be of cooking and two of dessert varieties, and for six dishes of dessert Pears. Generally, the competition was disappointing, though as a rule the quality of the fruit was especially good.

In the class for Kent growers, J. H. LONDON, Esq., Olantigh, Wye (gr. Mr. J. Bond), was first for both Apples and Pears, and his chief dishes were Rival and Cox's Orange Apples and Durondeau and St. Luke Pears. The Rev. J. R. LEIGH, Yalding, (gr. Mr. W. J. Johnson), was second in both classes.

Mr. JAMES KELLY, Claremont Gardens, Esher, was first for Apples and second for Pears in the Surrey, Sussex and Hants. His Apples were splendid, and the Pears very good. C. H. COMBE, Esq., was first for Pears and second for Apples, and his exhibits were also very commendable. The competition for this district was very good, several unplaced collections of Apples deserved a better fate, but the prize-winning dishes were of unusual excellence.

In the Gloucester, Oxford, Bucks, Berks, Beds, Herts and Middlesex division, J. B. FORTESCUE, Esq., Dropmore, Bucks (gr. Mr. C. Page), was first for Pears and second for Apples. His specimens of Marguerite Marillat and St. Luke Pears were superb. W. DARBY, Esq., Knebworth, Herts, was first for Apples.

J. A. BERNERS, Esq., won both first prizes in the Essex, Suffolk, Norfolk, Cambridge, Hants and Rutland division, with superlative collections. Sir MONTAGUE TURNER, Redfords, Havering, Romford, was second in both classes.

From the counties of Lincoln, Northampton, Warwick, Leicester, Notts, Derby, Staffs, Shropshire and Cheshire, came only a collection of Apples from G. C. W. FITZWILLIAM, Esq., Milton Park, Peterborough (gr. Mr. W. D. Green), which deservedly received the 1st prize.

The EARL OF COVENTRY, Crooms Court, Worcestershire (gr. Mr. W. H. Wilson), the only ex-

hibitor from this county was awarded first prize for very good Apples and Pears.

Mrs. A. WILSON, Tranby Croft, Yorkshire (gr. Mr. W. J. Earl), was the only exhibitor in the division from the six northern counties, and was awarded both first prizes.

Scotland was represented by only a collection of Apples from Major C. L. GORDON, Threave House, Kirkcubrightshire (gr. Mr. J. Duff); the fruits were worthy of the first prize awarded them.

Ireland was better represented, for there were three exhibits. The EARL OF BESSBOROUGH, Co. Kilkenny (gr. Mr. T. E. Tomalin), won both first prizes. His Baron Wolsley, Wealthy and Loddington Apples, and Marguerite Marillat Pears were superb. Lady EVA WYNDHAM QUIN, Carrick-on-Suir (gr. Mr. C. Garner), was second for Apples.

The two new classes open to amateurs possessing not more than 25 trees did not provide the amount of competition expected. Mr. COURTNEY PAGE, Enfield, was awarded the Silver Banksian Medal for cooking Apples and a Bronze Banksian Medal for dessert Apples. The Silver Banksian Medal in the dessert class was won by Mr. L. P. PULLING, Dorking.

AFFILIATED SOCIETIES CLASS.

The Affiliated Societies class induced very good competition, and the general quality was high. The Silver-Gilt Medal was awarded to the East Anglian Horticultural Society for a splendid effort. Pears, such as Pitmaston Duchess, Doyenné du Comice, Marie Benoist and Conference were particularly fine. Of the Apples, Charles Ross, Golden Wonder and Allington Pippin of the dessert sorts, and Bismarck, Lord Derby and Peasgood's Nonsuch of the cookers were excellent. The second prize of a Silver-Gilt Banksian Medal was won by the WALLINGTON AMATEUR GARDENERS' ASSOCIATION, which staged splendid cooking and highly coloured dessert Apples. A Silver Banksian Medal was awarded to the Chelmsford and District Gardeners' Association.

SINGLE DISH CLASSES: APPLES.

The customary classes for six fruits each of stipulated varieties were included and, for the most part, the competition was sufficiently good to justify the retention of the names of the varieties on the list, though exception may be made with the Apples St. Edmund's Pippin and St. Everard, which for many years past have been poorly represented. This year in the class for the former, there were only two exhibits, and these were of such poor quality that only the second prize was awarded. With St. Everard, the quality was even worse and no award was made.

On the other hand, the great bulk of the Apples were really excellent and there was good competition. Judging from the number of dishes shown, Charles Ross is the most popular dessert variety, as seventeen dishes of this handsome fruit were exhibited. Allington Pippin, with fifteen dishes, came second, and these were of very high quality. Of the culinary Apples, Lane's Prince Albert, with fifteen dishes, was the most numerous and Newton Wonder, with eleven dishes, was second in order of popularity.

It is not so easy to draw any comparisons from the exhibits of Pears, but there were seven dishes each of Beurré Hardy and Doyenné du Comice, and six of Conference.

J. H. LOUDEN, Esq., was a very successful exhibitor in these single-dish classes for dessert Apples, as he won 1st prizes with Adams' Pearmain, Allington Pippin, Egremont Russet, Cox's Orange Pippin, Lord Hindlip and Rival. In each case there was strong competition and quality was especially good.

The EARL OF BESSBOROUGH had the best dishes of Charles Ross, Barnack Beauty and Margil (here he was second, no first being awarded). W. B. WRIGHT, Esq., Wallington, was first for Glaygate Pearmain. The best dish of American Mother was shown by Lady EVA WYNDHAM QUIN and W. A. NIGHTINGALE, Esq., was similarly successful with Blenheim Pippin. E. W. DARLEY, Esq., Bookham, won 1st prize with brilliantly-coloured fruits of James Grieve

and C. COMBE, Esq., had the best of twelve dishes of Ribston Pippin.

The class for any other variety of dessert Apple brought fourteen competitors. The 1st prize was awarded to G. F. MARSH, Esq., for fine fruits of Coronation, J. A. BERNERS, Esq., was second with that excellent variety, Ellison's Orange, and J. H. LOUDEN, Esq., was third with King of the Pippins.

In the classes for cooking Apples, F. C. STOOPE, Esq., was first with Beauty of Kent, Bismarck, Blenheim Pippin, Edward VII., Dumelow's Seedling, Golden Noble and Pott's Seedling.

The CHURCH EDUCATION CORPORATION, Goudhurst, Kent, had the best Bramley's Seedling, while C. W. DARLEY, Esq., was first with Ecklinville. Showing brilliant fruits, Mr. W. STAWARD won 1st prize for Gascoyne's Scarlet and with immense, good-shaped fruits, for Peasgood's Nonsuch. 1st prizes were also won by the EARL OF BESSBOROUGH with Grenadier; C. H. COMBE, Esq., with excellent Lane's Prince Albert; J. A. BERNERS, Esq., with Lord Derby; Mr. J. S. KELLY with beautifully-coloured Mère de Ménage; Rev. J. LEIGH with Newton Wonder, and J. C. W. FITZWILLIAM, Esq., with splendid fruits of Warner's King.

J. H. LOUDEN, Esq., had the best dishes of Rev. W. Wilks and The Queen, and the best Stirling Castle were shown by E. W. DARLEY, Esq.

The class for any other cooking variety brought fourteen competitors, of which the best was adjudged to Annie Elizabeth, shown by G. F. MARSH, Esq.; the EARL OF BESSBOROUGH was second with Loddington, and J. A. BERNERS, Esq., third with Cellini.

SINGLE DISH CLASSES: PEARS.

In the classes for dessert Pears J. A. BERNERS, Esq., was first for Beurre d'Anjou, Beurre Hardy, Beurre Superfin, Conference, Easter Beurre, Emile d'Heyst, Glou Morceau and Josephine de Malines.

J. B. PORTESCUE, Esq., had the best Beurre Perran. The EARL OF COVENTRY excelled with Doyenne du Comice, and C. H. COMBE, Esq., with Beurre Naghan. With beautiful fruits of Durondeau, Mrs. HELSIAM-JONES won 1st prize and C. H. COMBE, Esq., with Fondante d'Automne. 1st prizes were also won by E. J. HOLLAND, Esq., with Marie Louise, and Major H. CAYZER with Winter Nelis.

In the class for any other variety of early Pear, there were eight dishes and the 1st prize was awarded to Mrs. G. WILSON for Beurre d'Amanlis, and Mr. STOOPE was second with Doyenne Boussoch, though Pitmaston Duchess was most favoured by the exhibitors. In the similar class for late Pears, Mr. COMBE was first with Beurre Alexandre Lucas, and E. H. TURNER, Esq., with Beurre Baltet Pere.

NATIONAL CHRYSANTHEMUM.

October 4.—The Floral Committee met at Essex Hall, Strand, on the above date. There was a good attendance and about a dozen novelties were submitted for consideration. The following awards were made.

FIRST-CLASS CERTIFICATE.

Reine des Blancs.—A beautiful, pure white Japanese variety with flowers of larger size than those of Roi de Blancs, from which it is a sport. It is classified as II. i.e. Shown by Mr. NORMAN DAVIS, Franfield.

COMMENDATION.

Reaseheath Bedder.—A very dwarf, free-flowering variety, with compact, light golden bronze flowers, borne on neat little plants at 15 inches to 18 inches high. Individual blooms are about 3½ inches across. The Commendation was given to the variety for its value as a bedding plant. Shown by Mr. J. HARDING, Poole Hall Gardens, Reaseheath, Nantwich.

Messrs. W. WELLS and Co., Mersham, showed a good white, October-flowering sort, of excellent substance. Mr. KEITH LUXFORD, Harlow, showed a few interesting varieties, notably Harry Thorpe, Golden Bronze, Gold-finch, and Red Anemone.

REPLY.

KOOI STRAWBERRY.

MR. GEO. KENT, Brocket Gardens, Hatfield, Herts, writes: "Your correspondent, Mr. Ernest Willoughby, Brompton, Yorks, can obtain Mdme. Kooi Strawberry from Mr. R. Hendrikson, 38, South Lane, New Malden, Surrey, S.W., and also Amazone and Mdme. Lefebvre, if he so wishes."

ANSWERS TO CORRESPONDENTS

A BUNCH OF FLOWERS: H. B. According to the *Code of Rules for Judging*, published by the Royal Horticultural Society, the word "bunch" does not imply that the flowers composing it are, or must necessarily be, tied together, as in a bouquet. It is therefore left to the discretion of the exhibitor, who cannot be disqualified if the stalks are not tied.

ARUM LILIES: Orlebar. The Arum Lilies should be successful if kept growing slowly in a cool house for the next two or three months. Afford water to the roots carefully, and withhold stimulants of all kinds until the plants have made plenty of roots. If they have been repotted recently they should find plenty of food in the new soil until the roots are plentiful, after which period they may be forced gently into flower.

BOOK: C. F. *Lawns and Greens*, by T. W. Sanders, will be suitable for your purpose. It may be obtained from our publishing department, price 4s. 3d., post free.

CHRYSANTHEMUM DISEASE: Experienced. The foliage is affected with rust disease caused by *Uredo Chrysanthemi*. The disease may be checked by spraying the plants at intervals during the time they are making their growth with a solution of potassium-sulphide made by dissolving 1 oz. of potassium-sulphide (liver of sulphur) in a quart of hot water, afterwards making this up, by adding clear water, to 2½ gallons. All the diseased foliage should be picked off and burned.

CUCUMBERS: T. D. The curled and generally inferior fruits on your Cucumber plants are due to a check of some kind, most probably resulting from low temperature. The season has not been very favourable to the cultivation of such crops as Cucumbers under glass, which require plenty of sunshine and heat.

FAILURE OF GRAPES: W. F. The Grapes were so badly damaged before they reached us that it was quite impossible to determine the cause of failure.

FRAGRANT ROSES: Rev. H. P. An article, by *White Rose*, dealing with fragrance in Roses, was published in *Gard. Chron.*, August 7, 1920, p. 70. Among other varieties especially valuable for their fragrance the author gives—Mrs. Bryce Allan, Mrs. George Norwood, Colcestria, Gustav Grunerwald, Mme. Maurice de Luze, Lady Alice Stanley, Mme. Abel Chateau, Augustine Guinoisseau, La France and Mrs. Elsie Hicks.

NAMES OF FRUITS: F. I. Chelmsford Wonder, P. A.: 1, Peasgood's Nonsuch; 2, Alfriston; 3, Tyler's Kernel; 4, Mère de Ménage; 5, out of character; 7, probably Dutch Mignonne. A. B. Winter Greening.—A. J.—1, Woodcock; 2, Norfolk Beefing.—W. J.—1, decayed; 2, decayed; 3, Beurre d'Amanlis.—D. M. T. Irish Peach.—A. A. Apples: 1, Wealthy; 2, Harvey's Wiltshire Defiance, 3, Wellington; 4, Tyler's Kernel; 5, Batchelor's Glory; 6, Dean's Codlin; Pears: 1, Brockwork Park; 2, Fondante d'Automne.—F. B.—1, Stirling Castle; 2, Bismarck; 3, The Queen; 4, Lady Sudeley; 5, decayed; 6, Ross Nonpareil.

NAMES OF PLANTS: S. H. H. 1, Polygonum cuspidatum; 2, Hibiscus syriacus; 3, Salvia Solarea; 4, Hieracium aurantiacum; 5, Potentilla recta macrantha; 6, Senecio tanguticus; 7, Pieris japonica; 8, Ruscus aculeatus.—

J. W.: 1, Senecio tanguticus; 2, Boltonia sp.; 3, Scrophularia aquatica variegata; 4, Echinops Ritro; 5, Potentilla recta macrantha.—Bids: 1, Ailanthus glandulosus; 2, Senecio Clivorum; 3, Rudbeckia laciniata nitida; 4, Sidalcea malvaeflora var.—W. O.: 1, send flowers; 2, Polygonum sp.; 3, Chelone nemorosa; 4, Hyssopus officinalis.—T. H.: 1, Phytolacca decandra; 2, Muehlenbeckia complexa (the Tomato is suffering from the common rust disease).—S. O.: Fuchsia fulgens. J. G. C. Ordinary form of the Field Mint (*Mentha arvensis*). The plant is perfectly wholesome, but the leaves are too hairy to make good Mint sauce. The plant is of the easiest cultivation in an open or not too shaded position. There are several better-flavoured Mints in cultivation.

NECTARINES SPLITTING: T. P. The splitting of the Nectarine fruits is due to weather conditions and improper watering of the borders. After a period of sunless weather the borders in which Peach and Nectarine trees are planted under glass generally need a good watering. It happens not infrequently that because the weather has been dull and cold the borders have been allowed to become drier than is really good for the trees carrying crops of swelling fruits. Advantage is then taken of a brief bright period to thoroughly water the borders, but if dull, cold weather immediately follows, transpiration is again reduced and the excess of sap finds an outlet in the splitting or bursting of the fruits.

PEACH AND PEAR GROWTHS UNHEALTHY: A. L. The foliage exhibits a condition known as "yellows." Your proposal to add lime and manure to the soil should be followed; the lime will be of special benefit to the Cherry trees, which you state have the same tendency to yellowing under glass.

PLUMS FOR A NORTH WALL:—The following Plums may be planted in Devonshire with every prospect of success. Coe's Golden Drop, Jefferson, Kirks, Grand Duke, Prince of Wales and Washington. It goes without saying that good drainage must be provided, using a fair amount of old lime rubble in the soil, more or less according to the nature of the soil.

ROSE LEAVES DISFIGURED: H. T. W. The Roses are affected with Black spot disease, caused by *Actinonema Rosae*. If you do not object to the foliage being disfigured, spray the leaves with Bordeaux mixture next season before the disease appears. This will prevent the defoliation often caused by Black spot.

RE-TURFING A LAWN: Artillery. We cannot understand from your letter whether you intend to place the new turf on the old. In any case, it would be advisable to dig up such perennial weeds as you mention, as their roots are very persistent and would very probably appear through the new sward. The dressing of sulphate of ammonia you propose to apply would have a good effect in helping to suppress weeds, for the grass would be stimulated and in time crowd out the intruders.

TO COLOUR HYDRANGEAS BLUE: K. R. It is claimed that a proprietary preparation known as Cyanol has the effect of causing the flowers of Hydrangeas to assume a blue tint. Others state that sulphate of iron and alum in solution, applied to the roots, has the same effect. Ammonia-alum is used by some growers for this purpose; this last is applied copiously twice a week at a strength of ½ oz. in one gallon of water. The blue colour develops naturally in some cases and especially in plants grown near the coast, but it is always found that the tone is richer when the flowers are not exposed too much to the direct rays of the sun.

Communications Received.—W. F. H.—J. H.—G. S. W.—E. B. A.—W. J. M.—W. L. L.—J. M.—I. D. W.—J. W.—G. B.—C. D.—M. V.—W. R. P.—L. S. A.—W. F.—J. A.—Dundagh—W. C. and Sons—J. R.—T. G. K.—G. C.—A. F. and S.—A. C. B.—R. M.—W. M. R.—C. W. M.—A. P.—E. M. B.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.5.

ACTUAL TEMPERATURE: Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, October 13, 10 a.m.: Bar. 30.2, temp. 59°. Weather—Fine.

Fruit Tree Stocks.

The progress of the investigations carried out at the East Malling Experiment Station on stocks of fruit trees formed the subject of an interesting contribution made by the Director of the Station, Mr. R. G. Hatton, to the Agricultural section of the Cardiff meeting of the British Association. Our readers are familiar with the work which has been done by Mr. Hatton and his colleagues in the direction of sorting out, diagnosing, describing and propagating Apple and Pear stocks, and they will be interested to learn that Plums and Cherries are also under investigation. The broad results of the survey of fruit-tree stocks are that commercial stocks had become mixed and that in the case of Apples the old terms of Paradise and Crab had in large measure come to mean, not types of special rooting or other character, but merely stocks which in the one case were propagated by layers and in the other from seed. Thanks to the work of observation of characters and of classification undertaken by Mr. Hatton, there is now available a series of Apple stocks ranging from those exhibiting extreme dwarfing qualities to those possessed of remarkably free-growing habit, and when these stocks have been tested and multiplied it will be possible for the grower to purchase a standard instead of, as in the past, a very variable type of stock. The idea that the Crab or free stock is necessarily a free-growing stock, or that the so-called Paradise is necessarily a surface-rooting, dwarfing stock, has been shown to be erroneous, and it has been found that free-growing stocks may be found among certain types of "Paradise," and dwarfing stocks among seedling Crabs.

As with Apple stocks, so with the Quince stock used for Pears, a number of types of distinct habit of growth has been isolated and described, and there is good promise that dwarfing stocks will be forthcoming which will spare the nurseryman and fruit grower the necessity of double-working such varieties as are too vigorous or too infertile when worked directly on the Quince. The state of affairs with respect to Plum stocks is no less remarkable than is that of Apple and Pear stocks. Existing Plum stocks include three species of Plum—*P. domestica*, *P. cerasifera*, *P. institia*—and exhibit ten different types of root system; these are being used with greater or less discrimination for the grafting and budding of Plums, Peaches, Nectarines, Almonds and Apricots. Other stocks in common use—Myrobalan, St. Julien and Black Davas—are merely seedlings showing wide range of variation. The so-called Mussel Plum stock comprises four or five distinct types of which only one bears fruit in any way resembling the "Mussel" Plum. Certain Plums, moreover—Pershire, Warwickshire Drooper, Blaisdon Red, Kentish Bush and Wellingham Gage—are, for better or for worse, grown on their own roots. Apart from the valuable results which must come from the systematic sorting out of Plum stocks, there is also promise that a dwarfing stock for Plums will be discovered and brought into use. The discovery of a series of types, graded with respect to dwarfing effect, represented a first step in the East Malling investigations. The next step was to test them on a large scale in the field in order that they might be used for the investigation of the much-vexed questions of the influence of stock on scion and of scion on stock. Large plantations were made in 1918 and in 1919 in six different districts, and already there is evidence that if the same variety of Apple be worked on different types of stock—e.g., the very dwarfing, the semi-dwarfing, the vigorous and the very vigorous, the scions reflect in their times of blooming and their rates of growth the character of the stock on which they are grafted. Thus even a strong grower and slow cropper like Bramley's Seedling may be curbed in its growth and brought to maturity precociously by grafting it on the very dwarfing stocks, while a weak-growing precocious variety, such as Lane's Prince Albert, may be strengthened and retarded by grafting on the more vigorous stock. That this is so is illustrated by the figures given by Mr. Hatton representing the percentage of trees blooming at two years of age. On the very dwarfing stock (type IX.), 95 per cent. of Lane's Prince Albert and 87 per cent. of Bramley's Seedling blossomed in the second year. On a semi-dwarfing type of stock the percentages were respectively 30 and 34; on a vigorous type, 5 per cent. and 0 per cent. Similarly, measurements of weight and length of growth produced show remarkably clearly the influence of the stock; a Bramley's Seedling on a dwarfing stock, at two years of age, weighed 5 oz. and grew 27 inches, whereas on a vigorous stock it weighed 10 oz. and grew 33 inches. Equally interesting is the evidence that the scion influences the stock; for example, that the vigour of a Bramley's Seedling imparts itself to some extent to a weak-root system like that of the French Paradise. It is greatly to the credit of British commercial fruit growers that they are co-operating heartily with Mr. Hatton and his colleagues in this work, which is of fundamental importance no less to the commercial grower than to the scientific horticulturist.

Trial of Sweet Peas at Wisley.—The Royal Horticultural Society intends to carry out a trial of Sweet Peas during the next three years, taking the various colour sections in succession, and including both Spencer and grandiflora types. The latter are included at the desire of many Fellows who appreciate their stronger scent and more regular form. In 1921 the trial will be of blue, lavender, lilac, mauve, and purple shades only, including the fancy, marbled, striped and flaked varieties of the National Sweet Pea Society's Classification, where any of the foregoing shades are involved. Varieties for trial should be sent to the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

Birmingham's Public Parks.—The Corporation of Birmingham possesses no fewer than 30 parks, 43 recreation grounds and 19 open spaces, a total area of 2,116 acres as compared with only 448 acres in 1903. Considerably over a quarter of a million of money has been spent by the Corporation in the purchase of land for parks and open spaces and about £1,000 is paid each year in rents for the same purpose. No fewer than 635 of the parks and open spaces have been given wholly or in part to the city by Birmingham citizens and public men. Birmingham's first park, that of Adley at Sallay, dates back to 1856 and was a gift of the Right Honourable C. B. Adley, afterwards Lord Norton and others.

The Papaw Fruiting at Kew.—For the first time for a number of years Papaw fruits are to be seen at Kew. The finest plant is raised above the water-level in the centre of the Victoria regia tank, and it has three full-sized fruits. At present these have the general appearance of dark-green, elongated Vegetable Marrows, and viewed from the path, appear 10 inches long and as much in girth. In an adjoining structure there is a second plant, growing amongst the collection of tropical economic plants, which has recently set several fruits. These are only an inch or so long, and are at right angles to the stout, fleshy stem, but, if all goes well, they will, later, hang down in the same manner as the older fruits. The small, greenish-yellow flowers are freely produced in the axils of the large-lobed leaves, but some difficulties seem to attend their fertilisation under glasshouse cultivation, otherwise fruiting would be more common. The Papaw (*Carica Papaya*), a native of tropical America, is common in the tropical countries of the East, where its great value lies in the properties of the leaves to render fresh meat wrapped in them tender in a short time. It is even said that merely to hang animal food in the trees makes it tender. When ripe the fruit becomes brownish-yellow in colour and is "palatable when eaten with sugar, and is said by some to have the flavour of Apricots; when the half-grown fruit is properly pickled, it is but little inferior to pickled Mango."

Trial of Roses at Bagatelle.—The Curator of the Rosary at Bagatelle informs us that there will be a trial of new Roses as usual during 1921-22. It is requested that the plants sent for trial should, if possible, be pot specimens and at least five plants of each variety should be included, giving their origin, parentage and any special treatment that may be required for the particular variety. The plants should be despatched so as to reach Bagatelle before April 15, 1921. The trial will be conducted in the public Rose garden and will extend until the month of October of the second year, to enable the jury to study the merits of the varieties during two full seasons. Plants sent for trial should be addressed to—Rosaie de Bagatelle au Bois de Boulogne, en gare de Neuilly-Porte-Maillot-Paris.

Thames Lock-keepers' Gardens.—All lovers and frequenters of the Thames are aware that the beauty of the gardens attached to the houses of the lock-keepers add greatly to the pleasure derived from a trip up or down the river. As an encouragement, the Thames Conservancy Board offers prizes annually for the best kept lock-keepers' gardens, and for the purpose of this

competition the river is divided into sections. The list of awards for 1920 has now been published, and from it we gather that first prizes have been awarded to the keepers of the locks at Pinkhill, Abingdon, Sonning and Romey; and second prizes to those in charge of Shifford, Mapledurham, Temple, and Old Windsor locks; while the champion prize—Sir Reginald Hanson's Challenge Cup—has been awarded to Mr. E. E. Slight, of Sonning Lock.

The Canadian Fruit Crop.—The fruit crops in Canada are plentiful, but growers are experiencing a difficulty in marketing their produce, owing to lack of transportation facilities and to high freight charges. In certain districts packages and carriage are so costly, compared with the prices realised for the fruit, that some Peach orchards have been opened to those who will gather and take away the fruit at their own expense. In the Annapolis Valley, Nova Scotia, standard barrels for Apples can be obtained at an average price of 75c. (about 3s. 10d.), while in Ontario growers are unable to secure barrels at double that figure. Annapolis Valley fruit is sold almost wholly in the old country, and a minimum price is guaranteed which gives a moderate profit.

Legacy to a Gardener.—The late Mr. Alexander Keller, of Gothland Villa, Sandown, Isle of Wight, and of Edith Grove, Fulham Road, S.W., who died on May 31, left £500 to his gardener, Mr. John Bryant, if still in his service and not under notice, but if he should have predeceased him this legacy is to be paid to Mr. Bryant's widow.

"Damping-off" Disease.—Tomato growers in the Lea Valley have experienced a serious loss through the damping-off of their Tomato seedlings. The complaint has been investigated by Mr. W. F. Bewley,* who found that sterilisation of the soil by heat or formaldehyde proved the most effective method of control. The method employed for sterilisation by formaldehyde is a very simple one; the pots or boxes in which the plants are grown are soaked in a 2 per cent. formaldehyde solution made by adding one gallon of commercial formaldehyde (40 per cent. formaldehyde) to 40 gallons of water. When the boxes are dried and the odour of the chemical has passed off, the receptacle may be used. The soil is sterilised either in the seed boxes or in a heap; by the former method formaldehyde solution is poured on until the soil is saturated, about a pint of solution being necessary for every 5 lb. of soil. The boxes are covered with glass for 48 hours to keep in the vapour; after this period the covers are removed and the soil is allowed to dry. The soil may be sterilised in a heap by saturating it with the formaldehyde solution, covering it subsequently with sacking for 48 hours and allowing it to become dry before use. Some valuable cultural hints are given for the control of the disease. The seeds should be sown thinly, and it was found that when they were covered with sand, the number of diseased seedlings was reduced by 20 per cent. Watering in the morning or afternoon is recommended as being preferable to mid-day watering, and the best system is to stand the seed boxes in a shallow tray containing water and allow the moisture to rise by capillary attraction. The disease is favoured by moist conditions in the soil and atmosphere. Therefore, in order to prevent stagnant conditions, the houses must be ventilated carefully.

Saying it with Flowers.—Tremendous efforts are being made in the United States of America to increase the sales of cut flowers, and one particular aim of the campaigners is to induce people to pay compliments in flowers instead of by means of formal birthday and similar greetings. The American horticultural trade papers show that much time, money and ingenuity are being expended in advertising and popularising the movement. Possibly if a similar movement existed in the United King-

dom the flower markets of the country would have cleared out their stocks each day during the past fortnight, instead of experiencing low prices and much "carry over."

Dumping Dutch Bulbs in the United States.—The members of the Florists' Club of Boston have passed a resolution condemning the sale of Dutch bulbs by auction in the United States of America, as being unfair to those who pay high prices early in the season. They also agreed to request all other horticultural clubs to refuse to buy bulbs next season unless the Dutch Bulb Growers' Association decides to eliminate this unfair practice.

Covent Garden Porters.—In view of the high cost of living, the porters of Covent Garden put forward claims to establish a uniform rate for the carriage of goods, and to make this apply both inside and outside the Floral Hall. An agreement has been concluded with the importers at the Floral Hall, through the Dock, Wharf, Riverside and General Workers' Union, whereby the porters receive an increase of from 100 to 150 per cent. Outstanding claims are to be negotiated with another set of employers. These include the application of the Floral Hall rates to all other porters, and a claim for the permanent men of a 41-hour week and £4 8s. weekly minimum. Altogether 2,500 men are involved.

The Land Union and the Agriculture Bill.—At a meeting of the Council of the Land Union, specially convened recently to consider the Agriculture Bill, the following resolution was unanimously passed:—"That, in the opinion of the Council of the Land Union, it would be disastrous to the great agricultural industry if the Agriculture Bill were passed in its present form; and that, unless drastic amendments are made to the Bill during the Report Stage in the House of Commons, the third reading should be opposed."

Gift of a Park to Canada.—The late Canon Frederick Charles Smith, of Hellingly, Sussex, who died on June 19, bequeathed one hundred and forty acres of land in the province of Alberta, Canada, for the welfare of the people of Grand Prairie, Alberta, for a public park, to be for ever "a sanctuary for man, bird and beast."

Chrysanthemums in the London Parks.—It is a pleasant sign of peaceful times that exhibitions of Chrysanthemums are being held at the London County Council parks. Such exhibitions are now open at Battersea Park, Victoria Park and Waterlow Park.

Potassic Fertilisers.—According to *The Journal of the Ministry of Agriculture* for October, the three pre-war potassic fertilisers—sulphate of potash, muriate of potash and kainit, are all available. The qualities are at least as good as before the war, and some of the French muriate is better than the pre-war material. The potash in pre-war muriate was usually equivalent to 45 per cent. of pure potash (K_2O), while that in the Alsatian muriate is equivalent to 50-60 per cent. of pure potash. For Potatos and Tomatos under glass, sulphate of potash is probably preferable to muriate of potash.

Severe Hailstorm in Rhode Island.—Advices from America show that many of the numerous market growers who have extensive glass-houses in and around Providence, Rhode Island, suffered a very heavy loss from hail during the middle of September. Although the storm was only of fifteen minutes duration and occurred chiefly in the western district, it caused damage to the value of over 1,000,000 dollars. The largest Rose growing establishment in the state had every square of glass broken, and the Roses laid flat on the beds; the damage to this establishment is estimated at 250,000 dollars. At Mr. E. L. Nock's Orchid nursery the houses were cleared of glass, the plants badly damaged and entirely denuded of flower and buds; the damage is assessed at not less than 40,000 dollars. In another place

200,000 Pansy plants were destroyed and glass broken to the value of 10,000 dollars. Many other establishments were damaged, the loss varying from 100 to 25,000 dollars. No hail storm of such severity has been recorded in the Providence district since the autumn of 1869.

Distribution of Surplus Bedding Plants in the London Parks.—The surplus bedding plants at the London County Council parks and gardens will be distributed to the public to-day (Saturday, October 16). Persons desiring to participate in the distribution should make personal application at the parks or gardens. The distribution will be made between the hours of 9 a.m. and 11 a.m. Plants will not be handed to children under the age of 14 unless they present a note from their parents or teachers.

Appointments for the Ensuing Week.—Monday, October 18: National Chrysanthemum Society's Floral Committee meeting at Exeter Hall, Strand; General Committee meeting at the British Florists' Federation offices, 35, Wellington Street, Strand, at 6 p.m.—Tuesday, October 19: Royal Horticultural Society's Committee meet at noon, at 3 p.m. Dr. A. B. Rendle will lecture on "Plants of Interest at the Exhibition"; National Sweet Pea Society's Annual Meeting at 35, Wellington Street, Covent Garden, at 2.30 p.m.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Productive Peach Trees.*—It has been stated by an excellent practical gardener and writer on horticulture that, in the cultivation of the Peach tree, one fruit for every square foot of surface is sufficient; a very judicious observation, in which I fully concur. If healthy and vigorous trees, together with fruit of large size and good flavour, be the object in view, I think no better advice can be given. Nevertheless, we sometimes find these desired requisites combined where trees are allowed to carry a greater proportion of fruit; for instance, in the current year (which has been more than usually unfavourable to the growth and ripening of the most delicious wall-fruit), I have had an immense crop of Peaches, and of moderately large size, which have ripened well, but the flavour was greatly inferior to what it has been in other years. I attribute this deterioration in flavour to the absence of solar heat, in conjunction with long-continued, excessively wet weather. On a cold, open wall, of nine feet in height, I have a Peach tree that extends over a surface of 279 superficial feet, which produced 566, or more than 47 dozen, Peaches. The greater number of these, certainly, were small; yet many of them measured 9½ inches in circumference. I also cut away, as thinnings, 1,400, or 116 dozen, Peaches. Last year, 1,844, on the same tree, when I had fewer in number, viz. 35 dozen, or 420 Peaches, the difference in size was very perceptible; some of the largest measuring 10½ inches in circumference. The flavour also was of the first order. They were also considerably earlier, the first having ripened on August 24 and the last on September 18; whilst, this year, I only got the first on September 13, and the last on October 8, which shows the present year to be nearly three weeks later than the last. But the greater number of Peaches that ever this tree produced, in one season, was in the year 1842, when I allowed it to carry about 600, or 50 dozen. Many of these were of large size, they all ripened well, and were of excellent flavour; but it must be allowed that 1842 was a good year for fruit in general, being the hottest and longest summer we have experienced for a great number of years. Notwithstanding this tree's productiveness, it does not appear diminished in health and vigour; it has been planted about nine years. The border, which is planted with Strawberries, is low and flat; it is 10 feet in width, and little trouble has been bestowed on its formation, having never been drained. The soil is naturally cold and clayey, and is about 14 inches in depth. The subsoil is a retentive clay.—*W. Boardman, Fallowfield, near Manchester. Gard. Chron., October 18, 1845.*

**The Journal of the Ministry of Agriculture* for October.

NOTICES OF BOOKS.

Water Plants.

THE writer of this book* approached the study of Water Plants "with the hope that the consideration of this limited group might impart some degree of precision to my own misty ideas of evolutionary processes." On the assumption that aquatic Angiosperms are derived from terrestrial ancestors, which have adopted the water habit at various times subsequent to their first appearance as flowering plants, the hydrophytes represent a group for whose history there is a generally accepted foundation. The book is divided into four parts: in the first three the writer marshals the facts of structure, development, life-history and function, which she has gleaned from a detailed study of the literature and from personal observation; in the fourth and last part she discusses the bearing of these facts on theories of phylogeny, evolution and natural selection.

Part I, entitled Water Plants as a Biological Group, includes a series of chapters dealing with the life-history of typical groups, namely, the Alismaceae, the Water Lilies, the Hydrocharitaceae, the Pond-weeds, the Duck-weeds, Ceratophyllum, the Utricularias, the Podostemaceae, and the Marine Angiosperms; this forms the largest section of the book.

In Part II, the Vegetative and Reproductive Organs of Water Plants are considered generally. Successive chapters deal with leaf-types and heterophylly, the anatomy of submerged leaves, the structure of aquatic stems, the aërating system, the root, vegetative reproduction and wintering; the flowers and their relation to the environment, and the fruit, seeds and seedlings. The early Lamarckian idea that the submerged type of leaf represents a direct response, on the part of the plant, to the medium, is rejected in favour of the view, primarily due to Goebel, that it is, in many cases, the juvenile form. The author suggests that for the old conception of heterophylly, as induced by aquatic life, we should substitute the idea that such a difference between the juvenile and mature forms of leaf as would render the former well suited to life in water, has been in many cases one of the necessary preliminaries to the migration from land to water.

Part III, deals with the physiological conditions of plant life in water. The problems which a water plant has to solve, in connection with its assimilation and respiration, differ widely from those which confront a land plant: oxygen is a rare and precious commodity, and no plant can be a successful aquatic unless it has means of obtaining an adequate oxygen supply or for husbanding it when obtained. Hence the elaborate aërating system which characterises the water plant. The idea that submerged plants, being able to absorb water over their entire surface, have dispensed with the transpiration current from root to leaf, which is universal among land plants, is shown to be erroneous by citation of experiments by various workers. Water plants depend partly on the soil in which they root for saline matters, and perhaps also for part of their supply of carbon dioxide. The statement that "Those plants which can tolerate peaty water enjoy the great advantage of freedom from the ravages of water-snails," may have a horticultural significance.

Part IV, is entitled The Study of Water Plants from the Phylogenetic and Evolutionary Standpoints. The geographical distribution of Water Plants is regarded as affording some support to Dr. Guppy's "Differentiation Theory" and Dr. Willis's "Law of Age and Area." In discussing the theory of the aquatic origin of the Monocotyledons as a class, the author regards as misleading the view that they are a decadent race which has been preserved by retreating into the water; and draws atten-

tion to the fact that the numerical preponderance of aquatic Monocotyledonous families, as compared with Dicotyledonous, does not depend upon the constitution of the group in general, but upon the existence of a number of closely allied, small, purely hydrophytic families of world-wide distribution. The great majority of Monocotyledons are not aquatic. A chapter is devoted to Dr. Willis's work on Podostemaceae, the great variety and marked specific differentiation in which he regards as impossible of explanation by "Natural Selection," as they cannot be explained as adaptational. Dr. Arber points out that though Willis's observations strike a severe blow at Natural Selection, considered as the originator of specific types, they afford important negative evidence for the importance of Natural Selection in the development of adaptation, as we have here a case of the absence of Natural Selection associated with the absence of special adaptations.

The last chapter briefly discusses the relation of Water Plants to the "Law of Loss" in

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYA COLMANIANA

ILLUSTRIS.

THE handsome form of this hybrid, with its bright mauve flowers and deep claret lip, shown by Messrs. J. and A. McBean, Cooksbridge, at the Royal Horticultural Society's meeting on September 7, was the darkest form of this useful hybrid yet shown.

The parentage given was L.-C. callistoglossa × C. Dowiana aurea, which accords with that in Sander's *List of Orchid Hybrids* and some other publications. But the original description of L.-C. Colmaniana in *Gard. Chron.* Sept. 29, 1900, p. 240, gives the parentage as L.-C. Arnoldiana × C. Dowiana aurea, being the record of the plant by the original raisers, Messrs. Sander. The only question was the identity of L.-C. Arnoldiana, which the Orchid Committee decided was a form of L.-C. eximia when giving it a First-class Certificate on June



FIG. 87.—VUULSTEKEARA MEMORIA JOSEPH CHARLESWORTH.
R.H.S. First-Class Certificate, Oct. 5, 1920. (See p. 183.)

evolution; a theory which the author has recently developed elsewhere. The expression indicates the general rule that a structure or organ, once lost in the course of phylogeny, can never be regained; if the organism has occasion subsequently to replace it, it must be constructed afresh. As an illustration, evidence is produced to show that the lamina of the Monocotyledonous leaf is not comparable to the net-veined blade of the Dicotyledon, but is merely an expansion of the petiole. There is nothing to correspond with the lamina of the Dicotyledon.

The text is followed by an alphabetical list, occupying more than sixty pages, of the more important books and memoirs bearing on the study of aquatic Angiosperms. There are also an index to the bibliography and a general index. The book is well printed and the numerous illustrations are clear and helpful. The author has chosen a subject of special interest and has treated it in a capable and interesting manner. A. B. R.

9, 1891, and as such it is recorded in the Royal Horticultural Society's List of Awards.

There is no doubt that the original few plants of L.-C. Arnoldiana in Messrs. Sander's collection were not L.-C. callistoglossa, and the question is how did the complication arise?

In 1915 Baron Schröder showed L.-C. Ivanhoe (C. Dowiana × L.-C. eximia), the darkest forms of which resembled L.-C. Colmaniana illustris.

CATTLEYA MIRA VAR. THE PRINCE.

At the meeting of the Orchid Committee of the Royal Horticultural Society, on October 5, Messrs. Flory and Black showed the result of a cross between Cattleya Rhoda and C. Dowiana aurea, under the name of C. The Prince, and it appeared in the report on p. 184, under that name. Reference to our published list, however, shows that it was previously recorded for Sir Jeremiah Colman, Bart., as Cattleya Mira, and thus Messrs. Flory and Black's plant becomes variety The Prince.

*Water Plants: A Study of Aquatic Angiosperms. By Agnes Arber, D.Sc., F.R.S. 8vo, p.p. xvi, 435, with frontispiece and 171 text figs. University Press, Cambridge, 1920. Price 31/6 net.



THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Cheshire.

Epidendrum.—The various members of this genus vary considerably, from those with well-defined pseudo-bulbs, such as *E. ciliare*, to others which possess long, flexuose stems. This latter group embraces a number of horticultural merit, such as *E. radicans*, *E. xanthinum*, *E. evectum*, *E. Wallisii*, *E. O'Brienianum*, *E. Boundii* and *E. kewensis*. The long, slender stems are useful for covering walls and pillars in Orchid houses and the ordinary plant stove. For covering walls, a long, narrow box may be used to give the plants a start, but in a moist warm-house, where the wall is sprayed occasionally, the aerial roots will soon become attached to the brickwork. The box should be filled one-half its depth with drainage material, and lumps of peat or Osunda fibre provide a suitable compost. The stems should be planted fairly closely together. These *Epidendrum*s also make good pot plants, and to secure a large specimen about ten stems should be placed in a pot eight inches in diameter. Annual propagation must be resorted to, to maintain a healthy stock. Occasionally numbers of side shoots are produced, and when these develop roots they may be removed and potted, placing several in one pot. Specimens that have become too tall may have two feet or so of their top growths removed. If five or six of these shoots are arranged near the edge of a 6-inch pot, and kept syringed for a week or two until established, they will finally develop into good specimens. Make the stems secure by tying them to thin, green stakes. Arrange the plants in the Cattleya house, or a shaded part of the plant stove; when grown in the latter house, a close watch must be kept for thrips, which often attack the young shoots. *E. Endresii* and *E. Armstrongii* are two charming Orchids; both are dwarf-growing plants, and may be grown in the intermediate house. They should be repotted when the new shoots are a few inches high, in a mixture of peat and Sphagnum-moss. *E. Endresii* is a somewhat rare plant; it is very free-flowering, which perhaps accounts for its disappearance. Weak shoots should have the flower scapes removed directly they form, otherwise the plant will suffer. All the members of this section of *Epidendrum* should be kept more or less moist at the roots throughout the year; they possess no pseudo-bulbs, and the stems cannot withstand long periods of drought.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNBERGHOLME, Warter Priory, Yorkshire.

Hyacinths.—Suitable varieties of Hyacinths may be planted now. A light, rich soil is preferable; it should be of good depth and well drained. Procure good bulbs and plant them 6 inches deep and the same distance apart. Arrange them broadly in distinct shades of colour to obtain a fine effect.

Astilbe (syn. Hostia) japonica.—This Spiraea is a useful, early-summer flowering plant for shady borders. A rich, open soil is conducive to good results. Strong clumps may be planted now and the stock may be increased by division at this season.

Kniphofia aloides.—This brilliant Lilywort is seen at its best in the north. Cool conditions delay and prolong the flowering period, and bold groups are enhanced by autumnal leaf-colourings. The variety *serotina* blooms even later and makes a pleasing display in the foreground of Bamboos. Division is best performed in spring, and intended sites for plant-

ing should be thoroughly trenched and heavily manured at this season.

Androsace.—A surface-dressing of peaty soil and sone chips will encourage the formation of roots beneath the prostrate stems of these plants. Repeat the dressing in spring. Species which are subjected to damping, such as *alpina*, should be planted in a perpendicular position between stones; failing this, a sheet of glass should now be tilted over the plants to protect them from cold dews and rain.

Climbing and Wall Plants.—Old and unwanted species should be discarded now; if sufficient young stock of suitable kinds for furnishing walls and lattice work is not held in the reserve garden, order the plants without delay. Thoroughly prepare the site by trenching and see that the drainage is free, especially where it is intended to plant varieties of *Ceanothus*, *Buddleia*, *Magnolia*, *Carpenteria* and *Wistaria*. The planting of hybrid forms of *Clematis* is best deferred until March; those of a woody nature, like *C. montana*, may be planted now, and bare stems of tall trees may be effectively clothed with them. Roses are always welcome; the climbing Teas should be grown on a warm wall, whilst ramblers make a pretty picture climbing over and through small trees. Jasmine and Honeysuckles are still worthy of high esteem. Avoid planting many species and varieties on a comparatively short wall or trellis, and curb the tendency to overprune. Freedom of growth is as necessary to the effectiveness of climbers on walls as elsewhere.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens,
Kew.

Bouvardias.—Although these plants will flower in an ordinary greenhouse, they do best in an intermediate atmosphere. This higher temperature is essential if the plants are intended to provide a supply of cut flowers over an extended period. When grown for this purpose, they are perhaps seen at their best when planted out in a bed in a low, span-roofed house. Grown in this way they are much stronger than pot plants, and also remain in flower much longer. Except those grown for market, one seldom sees really good pot-grown specimens of this plant. This generally results from the plants being stopped too late, the result being a mass of small, useless shoots. *Bouvardias* also suffer from lack of feeding during their growing season, and also when they are in flower. They are gross feeding subjects, and when their pots are well filled with roots enjoy frequent applications of dilute liquid manure and soft water, alternated with a concentrated artificial fertiliser. *Bouvardias* are very subject to attacks of *Begonia* mite, which must be prevented by the use of the sulphur vaporiser.

Pelargonium.—*Pelargoniums* of the fancy section that were cut back after flowering have started into growth, and should be shaken out and repotted, using as small pots as possible at this time. Young, rooted stock should also be potted. During the winter they need all the light available, and should be grown near to the roof-glass in a cool house. They are very subject to attacks of green fly, which must be kept in check by fumigations.

Wallflowers.—If grown for pot culture, Wallflowers should be lifted and potted. The so-called double German Wallflowers are excellent for this purpose, and may be had in tall and dwarf varieties.

Campanula.—*Campanula persicifolia* in its several varieties has long been a favourite plant for pot cultivation. The newer variety, *Telham Beauty* is also a splendid subject for the greenhouse in early spring, and should now be lifted from the nursery and potted. Stand the plants in a cold frame and keep the frame close for a few days until the plants are re-established.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.
The Node, Codicote, Welwyn, Hertfordshire.

Black Currants and Big-bud.—Where big-bud is prevalent on Black Currants it is advisable to examine the trees frequently and pick off the enlarged buds, and burn them immediately. Trees badly affected should be grubbed up and burned.

Storing of Fruits.—Continue to store Apples and Pears as they ripen and gather the fruits when they are dry. Choice fruits should be handled carefully and placed in single layers in baskets covered with wood-wool or some other packing material to prevent them from being scratched or bruised. Any fruits that have been slightly pecked by birds, also the small inferior ones, should be stored separately for immediate use.

Root-Pruning.—All fruit trees that have made gross growth and failed to crop satisfactorily, should have their roots restricted by partially lifting the trees at this season. Root-pruning should be done by an experienced person. First dig a trench two feet six inches deep, at a distance of four to five feet from the stem, more or less according to the size and age of the tree. Gradually work under the centre of the roots, and remove any tap roots that are growing in a downward direction. If fibrous roots are fairly numerous near the surface, the trench may be continued around the tree, but if the fibres are few and the tap roots have been severed, it will be advisable not to disturb the roots on the opposite side of the tree until the following season. The trench should be filled with rich soil to within 18 inches of the surface, and on top of this place five or six inches of good loam mixed with old mortar rubble, wood ash and bone meal. The roots should be laid out evenly, and all cut surfaces trimmed smoothly with a sharp knife. The final covering of prepared soil should be made moderately firm by treading. The trees will need the support of a stake to prevent them becoming loosened by winds.

Plums and Gages.—The following choice varieties of dessert Plums and Gages are suitable for planting against walls:—Early Transparent Gage, Transparent (original), Kirke's Blue, Jefferson, Green Gage, Comte D'Altham's Gage, Golden Transparent, and Cox's Golden Drop. Good culinary varieties that will form a succession from mid-July to November are: Rivers' Early Prolific, Czar, Belgian Purple, Victoria, Denbigh (Cox's Emperor), Pond's Seedling, Monarch and President. Where there is sufficient wall space some of these culinary varieties may be grown against walls, with, for preference, a west aspect. It is easy to protect wall trees from attacks of birds, both during the time when the flower buds are swelling and when the fruit is ripe. They may also be protected from cold winds and frost during the flowering season.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

The Orchard House.—The potting of the general stock of orchard-house trees should be done at the first opportunity, as the ripening leaves will assist the trees to make new roots, which are necessary before the trees are forced into growth. The importance of making the ball of soil and roots thoroughly moist before it is turned out of the pot must not be overlooked. Follow the directions given in my remarks in *Gard. Chron.*, August 21, in regard to compost, syringing the trees, etc. The method of reducing the balls of old trees may seem a severe one, but it is better to have a medium-sized pot full of roots than a large receptacle containing sour soil, besides the inconvenience of removing and storing trees in large pots. Pot Pears, Plums and Cherries set their crops best when the roots are pot-bound and the fruits finer, provided the roots are top-dressed and fed dur-

ing their season of growth. Give the roots one good watering after potting, and afterwards keep them moderately moist.

Trained Trees in Borders.—These are not so easily managed as pot trees. The wood of the current year may be perfect, and root-pruning, in consequence, not considered necessary; yet if the roots are neglected the young shoots will become gross and the trees unmanageable. To ensure good crops over a long series of years, the trees should be examined at the roots at least every other autumn. Much depends on the quality of the compost. All the roots may be shortened to within six or eight inches of their length of the preceding year, and this is especially necessary in the case of trees planted in raised borders. All stone fruits need a fairly strong loam enriched with lime rubble and bone meal, and when the compost is in a fairly dry state, it cannot easily be made too firm by ramming. When this work is finished the borders should be given two copious waterings to settle the soil amongst the roots. Succession trees should be pruned, regulated, and washed with an insecticide to prevent the spread of red spider. Make preparations for root-pruning or lifting such trees as require these operations, which should be done in October, if possible, before the leaves fall.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Cabbage.—It is not too late to plant Cabbage seedlings as ground becomes available for the purpose. Failures in the rows already planted should be made good with fresh plants, and the ground afterwards heeded to destroy small weeds, which are very plentiful this season. Slaked lime dusted around the plants will act as a deterrent to slugs; it should be applied in the early morning, when the soil and plants are damp.

Rhubarb.—As soon as the foliage dies down, suitable varieties of Rhubarb should be lifted for forcing, taking care not to injure the roots. The clumps should remain on the surface of the ground, in a position where they will be exposed to frost. Prepared in this manner, they will start into growth readily, when placed in the forcing shed. Roots established three or more years are the most suitable for the purpose. The varieties Dawe's Champion, Victoria, and Linnaeus will all force satisfactorily.

Beetroot.—The summer-sown Beetroots should be lifted and taken to the root store, taking care not to break or bruise the roots, as this would cause them to "bleed." After removing the foliage, store the Beets in heaps in damp sand or fine ashes. In this they will keep in a plump condition for as long as required. Beets sown in August will take no harm from frost, and may remain where they are growing until the end of the year.

Autumn Trenching.—It is advisable to trench a portion of the kitchen garden each year, and advantage should be taken of dry weather to proceed with this work. As deep cultivation can only be done periodically, a liberal dressing of manure should be incorporated with the soil, due consideration being given to the kinds of crops which are to occupy the ground. It is usual to trench land on which exhibition Onions are to be grown, and this ground should be cultivated early to allow time for it to become consolidated. Onions may be grown on the same site for several years in succession, with improved results, and, unless an attack of mildew in the crop has made it advisable to select a fresh site, the same position should be retained for them. In all cases the bottom spit should be finely broken, but the top should be left as rough as possible. On completion, the ground intended for the planting of Onions should be given a liberal surface dressing of basic slag.

HARDY FLOWER BORDER.

COREOPSIS GRANDIFLORA PERRY'S VARIETY.

ALTHOUGH it has been in cultivation for the better part of a century, *Coreopsis* has shown no marked divergence from the type until quite recently. From the florists' point of view, considerable improvements have been effected in the size and form of the flower, in strength of stem and freedom of flowering. For a plant so extensively cultivated in private gardens, and so largely grown for supplying the markets with cut flowers, it is a little strange that no divergence from the easily recognised type has been observed during the passing of the years. Now, however, the golden, single bloom has increased its number of ray florets, and become semi-double (see Fig. 83). The newcomer was

particularly attractive aspect. In some plants the blotch is more pronounced than in others, but all are delightful in their own way. It does not seem possible to use this *Iris* amiss in the border, even where comparatively dry. In a dryish border it is dwarfed in growth and in size of flower, and the latter is of less substance, but still is pleasing. In a rich border it is still finer, and by the waterside it assumes its true nobility of character, towering up and giving a number of glorious flowers of great beauty. According to Mr. J. G. Baker, in his *Irideae*, this *Iris* is a native of Asia Minor, Syria and Samos. It was in cultivation so long ago as 1768 and probably before then, for the species is mentioned by Miller in his *Gardener's Dictionary*, Edition 6, No. 9.

Mr. Baker adopts Miller's name of *orientalis* as having the priority over Reichenbach's of *ochroleuca*. It must not be con-



FIG. 83.—COREOPSIS GRANDIFLORA PERRY'S VARIETY.

noticed in a batch of seedlings, and Mr. Amos Perry, who acquired and perpetuated the variety, exhibited it before the Royal Horticultural Society on July 10, at the Provincial Show held at Cardiff, when an Award of Merit was granted. The more numerous ray florets add to the substance and lasting qualities of the blooms, but, fortunately, the doubling has not been carried so far as to detract from the elegance of the flower. *Coreopsis grandiflora* Perry's variety should prove a useful addition to golden flowers suitable for the hardy flower border.

IRIS ORIENTALIS (SYN. I. OCHROLEUCA).

PLANTERS of moisture-loving *Iris*es may well be reminded of this noble *Fleur-de-Lis*, which will reach a height of six feet when established in favourable positions. It bears on its tall stems a succession of large flowers which have a groundwork of pure ivory white, with a large golden blotch at the base, giving the flowers a

fused with the variety of *sibirica* known as *orientalis* or sometimes simply as *I. orientalis*. *S. Arnot*.

DRACOCEPHALUM RUPRECHTII.

I came across Ruprecht's Dragon's Head in an Aberdeen nursery recently, and was glad to see it again, as it had not come under my observation for some time and is a plant but seldom mentioned. Although not particularly fond of the most of the Dragon's Heads, I like some of them as forming a pleasing change to the golden and other Composites of late summer and early autumn, and others may like to know of the existence of *D. Ruprechtii*, a species from Turkestan, which has been in cultivation since 1880. It is to be found in two or three nurseries known to me. It grows from a foot to about a foot and a half high, and has clusters of lilac or lilac-purple flowers. It is hardy and requires the ordinary treatment of common border flowers. *S. A.*

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THE MARKET FRUIT GARDEN.

WITH a total of rainfall of 3.06 inches in this district of Sussex, September was considerably wetter than normal, but the bulk of the rain (2.16 in.) fell on four consecutive days in the middle of the month. There were thus two periods of fine, dry weather during which good progress could be made with the work of cleaning weedy plantations; and it is pleasant to see these again in a respectable condition. The fine spells sufficed also for the harvesting of the light crops, so that very little fruit remained on the trees at the end of the month.

A GOOD CROP OF PLUMS.

Plums finished very early this year, the last of the Monarchs and Presidents being marketed in ripe condition on September 10. I can now see the extent of my good fortune in having a fine crop of Plums in such a lean year. The total yield was 1,032 bushels, which is only 157 bushels short of last year's tremendous crop, whilst higher prices made the financial result better than in 1919. Two varieties, Early Rivers and Monarch, gave heavier crops than they did last season. Monarch, in fact, yielded 257 bushels, as compared with only 65. Early Rivers would have given a still better result had not a large proportion of the fruit been wasted owing to brown rot disease. Black Diamond also did better than last year, but in both seasons the crop was so light as to be hardly worth mentioning. This variety has never given me a full crop, and is evidently quite unsuitable for the locality. Victoria gave rather less than half the previous season's abnormal crop; but this was much more than was expected after such a heavy strain.

Prices for Plums were good throughout the season, though imports kept them from soaring to anything approaching the heights reached in 1918. The average gross return was 15s. to 16s. per half-bushel, the lowest price received being 11s. for some of the Victorias (which rose to 16s. 6d.), and the highest 20s. for the last of the Presidents. There was a nice little harvest of Monarchs, which realised 15s. to 18s. per half-bushel.

Most of the Plum trees have kept their leaves well and look promising for another year. An exception to this is some trees which were badly defoliated early in the season by leaf-curling Plum aphid. As a result of this infestation much of the wood has died, and will have to be cut out. I have never seen such a serious result from aphid attack. What with this pest, brown rot and silver-leaf, which has

spread a good deal this year, there will be plenty of work amongst the Plum trees in the winter.

AN EARLY APPLE HARVEST.

The Plum crop certainly saved the situation this year, as Apples have been very light indeed. By the end of September all varieties had been picked and marketed, except Allington Pippin and Newton Wonder. I was advised to get rid of them early, as heavy imports were expected in October. The advice appears to have been sound, as, at the time of writing, Apples are arriving from America, Canada, Spain, Italy, France, Holland, Belgium and the Tyrol; and prices are lower than they were a few weeks back. It is probable that overseas supplies are being hurried on to our market to arrive before the control of prices again comes into operation towards the end of October. The reason for re-imposing the control is probably known only to the authorities concerned. To the grower it fortunately matters little, as there is no difficulty in marketing this season's light crop

ordinary packing in half-sieves, but I was fortunate in having a big supply of pre-war boxes on hand.

MOTOR CULTIVATION.

About a fortnight of fine weather in September gave a good opportunity to try the Simar motor cultivator, the arrival of which was mentioned in my last notes. I am glad to be able to give a good report of its work. In the short time during which conditions were suitable for soil cultivation it completely transformed the appearance of a considerable area of the farm, not by its own actual work alone, but also by reducing the area which had to be hoed, and so enabling the hoers to get over much more ground than they could otherwise have covered.

I regard this machine (see Fig. 89) as a substitute for hand hoeing, and do not expect to use it where horses can work, as I think that horse cultivation will be cheaper. As compared with the cost of hand hoeing or digging, on the contrary, the machine gives an enormous advantage, whilst

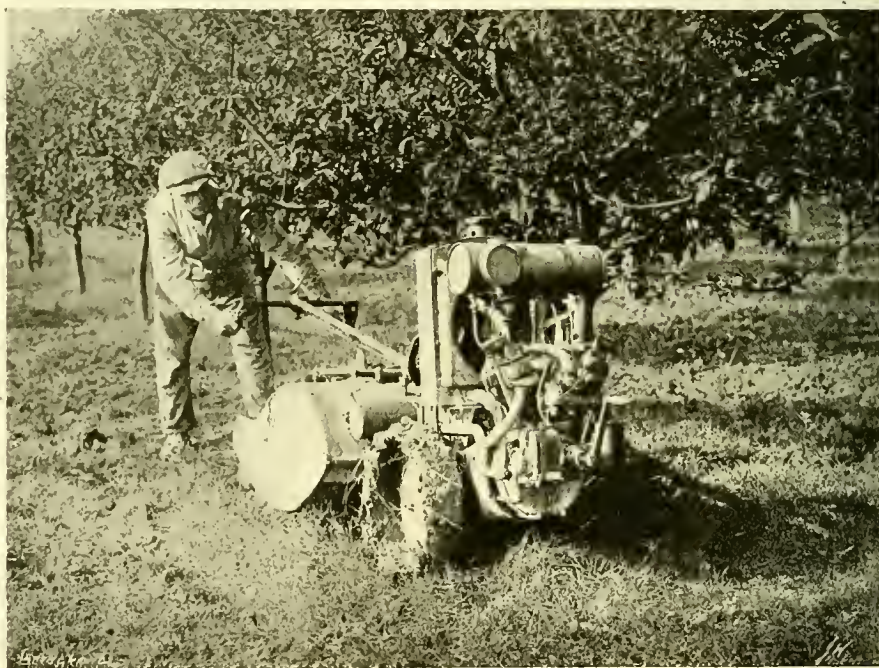


FIG. 89.—THE SIMAR MOTOR CULTIVATOR AT WORK UNDER FRUIT TREES.

Before the control comes into force, and it is safe to say that there will be very few English Apples left to control. Thus the home grower will escape whilst the foreigner suffers, which is not in accordance with the usual state of affairs.

Luckily, Apples have ripened early, so that the September marketing of late varieties was done without sacrificing much in bulk or quality. Some of the prices received for good samples of dessert varieties have been cheering. The best of the Worcester Pearmain, for instance, which were extra fine this year, and the only variety bearing a full crop, realised 20s. per half-bushel, whilst a few half-sieves of selected Charles Ross made 24s., and Cox's Orange Pippins reached 30s. The very choicest of the last-named were selected and tastefully packed in boxes holding one dozen, and the reward came in a return of 6s. to 8s. per dozen Apples! If the boxes had to be bought at present-day prices, even this return might not compare any too well with that obtained for

the quality of the work it does is vastly superior. My present plan is to cultivate a plantation of half-standards in three operations. The horse-drawn cultivator works down the centre of the alleys between the rows of trees, where there is plenty of room for the horses to walk without doing damage. The motor, which is only 3 ft. high, then works under the branches, as close to the stems of the trees as possible, on both sides of the rows. There is left only a narrow strip on which the trees actually stand to be hoed by hand. There are, of course, plantations (of bush Plums, for instance) where horses cannot work at all, and all the cultivation has been done by hand. Here the motor will be still more valuable. Hoeing will be reduced to a minimum, and, I hope, digging done away with altogether. The machine does good work also between the rows of Currants and Gooseberries which have grown too big to allow of horse cultivation, as the width of its track can be adjusted from 22 to 28 in.

The Simar does not draw any implement, as

do the usual tractors. It is a self-contained rotary soil tiller. The twin cylinder petrol engine which propels the machine, at the same time revolves a spring-tined tiller, which breaks up the soil in a surprising way, to a depth which can be adjusted from 2 in. or 3 in. to 10 in. Whether deep cultivation is possible in anything but light soil in good condition, I cannot say. All that interests me for orchard

FLOWER GARDENING AT THE ZOO.

Those enthusiasts who require evidence in support of their views that gardening—its art and practice—more nearly holds the secret of perpetual youth than any other occupation or hobby, should pay at least one annual visit to the Royal Zoological Society's Gardens at Regent's Park. The flower gardening at the

than during the present year. It certainly is difficult to imagine anything finer in summer displays than the broad sweep of beds which extends from the home of the lions up to the obelisk near the Mappin terraces. In this long stretch there are numerous rectangular beds, and, although occasionally filled with brilliant flowers and foliage, the majority contain plants and flowers of softer hues and exhibit a taste in harmony far above the ordinary.

It is seldom that Mr. Young attempts the massing of one subject in a bed; indeed, he has never been keen on this style of summer bedding. He aims first at elegance, and then at colour schemes, and he achieves success. A specially distinct feature of the summer flower gardening at the Zoo is the use of erect, single-stemmed plants of many kinds, rising above a groundwork of a different subject.

The purpose of this note is to emphasise the point that first-class flower gardening is to be seen at the Zoo, and to indicate some of the upright plants upon which so much of the success depends. These are mostly 2½ ft. to 3 ft. high. Fuchsias are a prominent feature, and of these Mr. Young has an unusually fine collection, including the old Rose of Castile, and such varieties as Marinka, Ballet Girl, Mrs. Marshall and Phenomenal. The Fuchsias have one main stem, with the lower growths suppressed, and all those which do not interfere with the setting of Pelargoniums or other plants are allowed to develop, so that each becomes a graceful, fountain-like specimen bearing an abundance of blooms. Violas, gold and silver variegated Pelargoniums, Lantanas, Irisine, Coleuses and dwarf, yellow-leaved Fuchsias are used as a setting for these taller Fuchsias, according to the harmony or contrast desired.

Double-flowered Tropaeolums are planted freely, trained as single-stemmed plants about a yard high, and are literally roped with deep golden balls of bloom. Several varieties of Lantana, cultivated as single-stemmed specimens, are charming. Although the Lantanas and many other plants are grown on this "standard" principle, the growths are not pinched back to produce a compact head—such a formality would not appeal to Mr. Young's sense of beauty.

cultivation is the production of a shallow surface tilth, which suppresses weeds, conserves moisture down below, and does not injure the roots. This machine works readily on my soil, which is mostly on the light side. There are, of course, limitations to its powers. It will not work when the ground is sticky or greasy after rain, and I find that it cannot make much progress where the ground is thickly coated with Bent grass, which quickly clogs the tiller. All fibrous-rooted weeds it seems to make light of, even where they grow almost as thick as a pasture, as they are thrown out behind instead of winding themselves round the tines. For work under reasonable conditions I am confident that the machine will prove a success; but I certainly think that it might rather often be at a standstill for want of minor attentions, unless in the hands of some one who knew a little about motor-cycle engines.

APPLES WITHOUT PIPS.

Mr. Pearson's note (p. 160) on Apples without pips interests me, because I have noticed the same thing this season. I suppose we may take this as proof that conditions were unfavourable to fertilisation at blooming time; hence also the light crop. But I should like to be told what has happened when a full-sized Apple contains no pips at all. If it has only one perfect pip, it has, of course, been fertilised; but, if it has none at all, I suppose pollination has not taken place. I know that the Apple, being parthenocarpic, can set fruit without fertilisation of the bloom, but I understood that such fruit always dropped before swelling to any size.

Whilst on this subject of pips and fertilisation, I would like to mention the case of the Apple Royal Jubilee. Whilst referring recently to the lists of varieties supposed to be self-sterile, I happened to notice that this Apple is included, yet with me it stands no chance of cross-fertilisation, because it blooms about three weeks after any other variety. In spite of this it is a regular and prolific bearer. I cut open several fruits, and found perfect seeds in several, so it appears that investigators must have made a mistake in placing this amongst the self-sterile varieties, unless they explain the fact by its being self-sterile in some localities and self-fertile in others, as some American Apples are said to be. *Market Grower.*

Zoo (see Figs. 90 and 91) is extensive, beautiful and distinct, and is as well worth inspecting as are the beasts and birds. The Council provide the means for this horticultural display, but the artist who paints the picture is Mr. Young, who, in spite of the fact that he has been garden superintendent for forty years, retains the enthusiasm which brought him into the front rank



FIG. 91.—FLOWER BEDS NEAR THE AVIARY AT THE ROYAL ZOOLOGICAL SOCIETY'S GARDENS.

as a flower gardener more than a quarter of a century ago.

Many alterations and improvements have been made in the Zoological Gardens during late years, and Mr. Young has taken advantage of most of them to extend the horticultural features. Those competent to judge assert that gardening at the Zoo has never been better

The silvery-leaved *Leucophyton Brownii* and the more rigid *Eucalyptus cordata* (see Fig. 90) serve admirably in association with blue or mauve flowers. The old *Mimulus glutinosus* flowers freely when grown as indicated, and *Lippia citriodora* and *Heliotropes* are similarly grown; so are *Swainsonia galegifolia* and Ivy-leaved *Pelargoniums*.

In addition to the "bedding," Mr. Young provides a fine display of herbaceous plants in a bold border between the large aviary and the refreshment room (see Fig. 90). Trees are admirably cared for, and if one dies or is removed when buildings are extended at least one young tree is planted, so that there may be no break in the arboreal beauty of the gardens. Large numbers of gardeners pay a visit to London each year for the purpose of inspecting the public parks and the gardens at Kew and Hampton Court; they should add the Zoological Gardens to their visiting list in the years to come.

OCTOBER VEGETABLES.

WHILST a calendar of garden operations proves a useful guide to the average gardener and enables him to keep well up to date with the sowing and planting of the various vegetables, it does not show what vegetables are actually in season from time to time. This is an important point, especially in a garden where every endeavour is made to obtain a full supply of vegetables both early and late in the season, and to prolong their period of usefulness. This being so, I purpose sending notes, monthly, to indicate which vegetables are available and show when they were sown or planted. I hope, too, that the notes will help to impress upon readers what a really wonderful variety of vegetables may be had practically all the year round, a fact, as yet, I am afraid, only realised by the few.

Owing fortunately to absence of severe frost so far, the main crop of Runner Beans is still in full bearing. These were sown in boxes on May 4, raised under glass in medium heat, and planted in the open on well-prepared ground about May 20, after being carefully hardened off beforehand. The varieties now being picked are Scarlet Emperor Selected, Prizewinner, Chelsea Mammoth White and Best of All.

We are gathering French Beans from plants grown in cold frames. The varieties are Canadian Wonder and Golden Wax Pod, of which the seeds were sown on June 20, the plants raised in mild heat, hardened off and planted in the frames about a fortnight later. The frames were ventilated freely on fine days, and the lights elevated on wooden supports as the growth extended.

Cabbage seeds were sown in seed-beds early in February, March and April, and the seedlings planted out in April, May and June; these are yielding good heads now, and will do so for a long time to come. The varieties are Tender and True, Favourite and All Heart. Coleworts sown in May, and planted out early in June, are available, the varieties being Resette and Hardy Green.

We are now using Best of All and Drumhead Savoy, from a sowing made early in April, and planted out, in two batches, in May and June.

Cauliflowers were sown in two batches, the first early in April, the second in May, and the resulting seedlings were planted out in May and June. The varieties now in use are Early Giant, Autumn Giant and Mammoth.

We have been digging Celery for some time past, from the early supplies grown on the flat, and blanched by means of brown paper collars. The three varieties selected for early supplies are Standard Bearer, Invincible White and Aldenham Pink. Seeds of the first and last were sown on January 27, and of the second variety on February 9. Raised in gentle warmth, the seedlings were pricked off into other boxes, eventually hardened off carefully, and planted out on April 1.

Kohl Rabi, better known on the Continent than here, we sowed in succession every three weeks from the beginning of April, where the plants were to grow, and thinned the plants at intervals. We grow the Green Purple and White sorts, and have been using the roots for some time.

Marrows are still in full bearing, not having been cut down by frost. We have

large quantities of Moore's Cream, Table Dainty, Perfection, The Sutton, Pen-y-Byd, Long White, Long Green and Prince Albert. These were sown about February 25, raised in heat, and after being hardened off well the seedlings were planted, two to a light, in frames, on a mild hot-bed of leaves. The growths were subsequently pegged down and trained as occasion demanded. At the end of May, the lights were removed entirely, and shortly after the frames were also taken away, and the plants allowed every opportunity to grow freely. Commencing to yield in April, they will continue to supply plenty of fruits until frost comes. Moore's Cream and Custard varieties were sown later, on May 6, in mild heat, and transplanted in soil on a mild hot-bed, after being well hardened off, without frames or lights, at the end of the month; they have also been yielding continuously for a long time.

Three varieties of Peas, which are now yielding excellent supplies, have proved themselves invaluable for late crops. These are Edwin Beckett, Autoerit and Quite Content. The seeds of Autoerit were sown in the open on May 20, and of the others on June 16, and protection from rats, mice and birds was afforded. When the seedlings appeared they were carefully staked and netted, the latter operation being most important for late Peas, owing to the raids made on the young pods by birds at this season of the year. Copious supplies of water are essential, and occasional feeding with manure-water is necessary. We are gathering pods of these Peas now, and so long as the frost keeps off we look for continuous supplies.

Long Standing and Prickly Winter Spinach, sown at the end of August and beginning of September, have just come into use.

We are using Sutton's Black, Dobbie's Purple, Cheltenham Green Top and Blood Red Beets, which were sown during the months of April and May; also Globe Beet, of which successional sowings were made during April, May and June.

The Carrots being used now are Intermediate, Favourite and Champion, the results of sowings made during February in heated pits, and frames, and in the open, where sowings were made at intervals in March and April.

Onions and Shallots have been harvested, and are, of course, available in quantity. Onions such as Ailsa Craig, Premier and Exhibition were sown in boxes in January, raised in gentle heat, pricked off into boxes, grown on close up to the glass, hardened off carefully, and finally planted out in April. Shallots were inserted in the open in February.

Far more ought to be done to ensure a good supply of salading all the year round. We make sowings about every fortnight from the beginning of June, and are using at the present time Batavian, Green Curled and Lettuce-leaved Endives, and have supplies practically all the year round. We aim at producing Lettuces from January to December. From sowings made in the open since the beginning of June, at intervals of a fortnight, we are now utilising Mammoth and Superb White. Cabbage Lettuces also are raised on similar lines, and we are using All-the-Year-Round and Ideal.

Of Mustard and Cress little need be written except to note that seeds are sown about every ten days, in boxes, to keep up a regular supply. Radishes, too, are sown each ten days, and the frequency of these sowings does not mean waste, as only a sufficiency of seed to give necessary supplies is sown. We are now pulling succulent roots of French Breakfast and White Olive.

We are still able to gather Tomatos from the open, where the plants are growing against the south wall of a Peach house. Seeds of various varieties were sown during March, in gentle heat; the seedlings were potted in the usual manner, and finally, after being hardened off, were planted out. These plants have fruited wonderfully well and are quite free from disease. E. Beckett, Aldenham House Gardens.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 171.)

SUSSEX.—The fruit crops suffered severely from cutting winds and late frosts, which, accompanied by hailstorms, tore the young leaves of exposed trees to ribbons, and in many instances ruined the whole crop. Early in the spring there was every prospect of a record year; practically every tree—of whatever shape or size—was laden with blossom. Trees which did escape the storms are carrying heavy crops, especially Apples and Plums, and these fruits are of good quality. Bush fruit has been plentiful and Strawberries over the average. Our soil is a sandy clay overlying sandstone rock, which in dry weather hardens like cobble stones, and after heavy rains is unworkable.—*Ernest Markham, Gravetye Manor Gardens, East Grinstead.*

—All fruit trees blossomed profusely. Apples, Pears and Sweet Cherries failed to set, in consequence these are under average crops. The fruit is of good quality and clean. Peaches, Apricots and small fruit set well, some above the average, and the fruit was of good quality. Very few insects have been in evidence this season. The soil is of a sandy nature.—*W. Buckingham, Milland Place Gardens, Liphook.*

—Apples and Pears are very scarce this season, owing to the heavy crops of last year, the cold April and frosts in May. Apples and Pears never showed very good promise, for blossom was none too plentiful. Apricots failed to set, but Peaches set very well, and the trees had an average crop. Plums are also a light crop. Bush fruits have again given excellent returns. Strawberries were plentiful and good. The trees have kept free from caterpillars. Aphis being the worst pest this season.—*J. J. Thompson, Compton Place Gardens, Eastbourne.*

WILTSHIRE.—Fruit trees generally were in flower earlier than usual and a disastrous frost of 10° spoilt a great amount of Apple blossom, also young fruits of Pears and Plums in the open, although on walls these fruits escaped damage. Bush fruits lost a few of the most exposed of their fruits, but generally there was a good yield in this neighbourhood. Black Currants were scarce, but we had plenty of Gooseberries. Strawberries were better than usual. Peaches, Nectarines and Apricots set good crops but Peach trees, owing to leaf-curl, are defoliated to a great extent, and in some cases apparently dead. Spraying is certainly a preventive measure. The soil is poor, with flint and chalk subsoil.—*James Glasheen, The Manor Gardens, Ramsbury.*

ENGLAND, N.W.

CUMBERLAND.—Owing to the very wet, cold and sunless spring, Apples, Pears, Plums, Apricots and Cherries, also Peaches and Nectarines, although literally covered with blossom, failed to set their fruits, consequently the crop is much under the average. Black Currants were almost a failure; in many gardens the embryo fruits of these, and also Gooseberries, dropped off. Big bud is very prevalent on Black Currants. We had a heavy crop of Gooseberries.—*James Tait, Justicetown Gardens, Carlisle.*

—Fruit is very scarce on early-blooming trees of all sorts, but late Apples in most places seem from good to fair crops; some orchards have practically no fruit.—*Richard F. Lamb, Witharslack Hall Gardens, Grange-over-Sands.*

—The fruit trees developed plenty of blossom, but a gale in May destroyed every kind of bloom that was exposed to it. In sheltered places, Black Currants and Gooseberries were good. Strawberries did not send up flower spikes so strong as usual, but the quality of the berries was good, especially the variety King George V. Pears are a complete failure. Morello Cherries and Plums were thin crops, and Damsons a failure.—*W. A. Miller, Underley Gardens, Kirkby Lonsdale.*

(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Usefulness of Nerines.—Recent references to the value of Nerines as greenhouse and conservatory plants induces me to state that I have a specimen of *Nerine Fothergilli* major in flower. It carries nine spikes and a total of 126 flowers. It was potted last year into a 9-in. pot and has 17 bulbs. I also have a specimen of *Nerine crispa* which has not been reported for five years. It is in a 7-in. pot and carries 17 spikes of bloom. Both specimens are extremely beautiful. *Arthur Fry, The Court Gardens, Llandaff, Cardiff.*

Veronica Daubenyi.—A plant in cultivation under the above name seems to me to be a nearly white flowered form of the very variable *V. Lyallii*. The flowers have very faint pink veins, otherwise they would be pure white. They lack the pink and blue zone across the central area of the corolla, which pervades not merely the numerous forms of *V. Lyallii*, but those of its nearest relatives, *V. Bidwillii* and *V. cataractae*. In other respects *V. Daubenyi* has ovate leaves of medium size for *V. Lyallii*, on ascending shoots bearing racemes three to four inches long. The plant blooms over a long period, and makes a beautiful subject for the rock garden. *J. F.*

Late Strawberries.—If Mr. Lisle refers to the correspondence on pp. 77 and 99, he will realise that he has gone astray from Mr. Wheeler's point, where he refers to a good Strawberry for a wet season. I have always grown Royal Sovereign as an early variety and, under ordinary cultivation, I have never gathered fruits of this variety in September. I do not think it can be termed a late variety. I know Royal Sovereign may be fruited as late as September, but only from plants that have been forced and gradually hardened off for planting out in May. It would be interesting to know if by any other means this Strawberry may be fruited so late in the season. *T. P.*

Loss of Fragrance in Flowers (see p. 136).—I can confirm what Mr. Walker states with regard to *Mimulus moschatus* or scented Musk. For several years past I have purchased, or had given to me, plants and seed of this Musk from various places in the United Kingdom, and, notwithstanding that I have grown the plants both indoors and out, as well as in the sun and shade, in every case they were scentless. I was very hopeful in one instance, as the plants were supposed to have been in the same garden for over 25 years, but alas, the scent was still lacking when I grew them. My only hope now is to get a plant some time or another from a cottager in a country village. However, if any of your readers have the old-fashioned and true scented variety, it would give me great pleasure to receive a small plant, for which I should be extremely thankful. *A. Launder, 23, Holmewood Road, Brixton Hill, London, S.W.2.*

No Apple Pips.—Mr. Charles E. Pearson, asks (p. 160) whether the absence of pips in Apples is a matter of general observation. Here it has been most marked. I remarked one day that I had not seen an Apple pip this year, but my next Apple contained six pips. This, however, is about the only example I have met with perfectly formed pips in it. The cores are, as a rule, misshapen. *James Wood Whall, Castle Park Lane, Worksop.*

The R.H.S. Fruit Show.—The fruit exhibition held last week in the R.H.S. Hall was remarkable in more respects than one. On entering the hall visitors must have been impressed by the wonderful display of Apples and Pears, considering this was supposed to be a year of great scarcity. The colour, too, of the Apples was exceptionally high considering the sunless summer, and again raises the question as to the causes which influence the development of rich colouring in these fruits. No doubt many of the finest specimens were from trees that had had their previous crop

thinned, given manurial aid and subjected to a rigid summer pruning. Many of the Apples were affected with scab, which has affected this fruit this year, in some instances, in spite of sprayings. The somewhat new Apple, the Rev. W. Wilks, was prominent in excellent condition. As a second-early variety, this Apple has a great future. The tree bears freely in a young state, while the quality and appearance of the fruit leaves little to be desired. The variety Charles Ross was well represented by medium-sized specimens, carrying good colour. This is a desirable Apple, the tree, which crops freely, being less prone to canker than some others. Crimson Peasego's Nonsuch is a desirable variety with great depth of colour. Wealthy, although handsomely coloured, is hardly good enough in quality to rank as a desirable fruit

bunches of Mrs. Pince, which is not the easiest of Grapes to colour. There were a few specimens of Lady Hutt, a Grape not nearly enough grown for February consumption. The bunches of Alicante were probably the least noteworthy when we consider how easily this Grape may be grown. The bunches were small and the berries also; this variety seldom fails to colour well, even when grown in a putting shed. *A Yorkshireman.*

TREES AND SHRUBS.

THE FRUITING OF LONICERA PILEATA.

ALTHOUGH *Lonicera pileata* has but little tawny as a flowering plant, its neat, prostrate habit with dark lustre-green, box-like leaves



FIG. 92.—FRUITING BRANCHES OF LONICERA PILEATA; FROM A PLANT IN THE CAMBRIDGE BOTANIC GARDEN.

in a collection of dessert Apples. The boxes and tubs, so skilfully filled with exceptionally fine fruit by the Guildford Fruit Farm Co., constituted an object lesson in good packing. The Grapes were of exceptional quality. No doubt the pride of place must be given to the two bunches of Muscat Alexandria staged by Mr. J. Lock. It would, indeed, be difficult to find a fault in them. The next outstanding exhibit was the bunches of Black Hamburgh shown by Mr. Shelton in the collection and the class for two bunches of this variety. The bunches averaged 3 lb. in weight, with large berries, handsomely coloured and finished. Here was an example of how to thin Grapes which those who are not experts in Grape growing would have done well to study, for to this phase of successful Grape culture is not the least important in the production of perfect specimens. Exceptionally fine, too, were the

and more or less evergreen nature, particularly in a young state, make it a very desirable subject. Its chief beauty, however, lies in the fruit which, unfortunately, it is very shy in producing, and seldom is a good fruiting specimen seen, but a spray well laden is very attractive. The berries are of a rich glossy purple, invested at the top with a curious cup-like outgrowth from the calyx. The species is a native of Western and Central China; it was discovered by Professor Henry, and introduced into this country in 1900 by Mr. E. H. Wilson. The illustration (see Fig. 92) is of a branch from a plant which is fruiting very freely this year in the Cambridge Botanic Garden and was obtained from the Arnold Arboretum some years ago. Specimens were exhibited before the members of the R.H.S. Floral Committee on the 5th inst. *F. G. Preston, Cambridge.*

SOCIETIES.

ROYAL HORTICULTURAL.

TRIAL OF ANTIRRHINUMS AT WISLEY.

The following awards have been made to Antirrhinums by the Royal Horticultural Society after trial at Wisley:—

AWARDS OF MERIT.

No. 9, *Tom Thumb* (yellow), sent by Messrs. Dobbie and Co.; No. 26, *White Queen*, sent by Messrs. Simpson; No. 46, *Bonfire*, sent by Messrs. Simpson; No. 54, *Maize Queen*, sent by Messrs. Watkins and Simpson; No. 64, *Sybil Eckford*, sent by Messrs. Simpson; No. 72, *Wild Rose*, sent by Messrs. Simpson; No. 80, *Daphne* (considered to be a good stock of Fascination), sent by Messrs. Burpas; No. 81, *Rose Queen*, sent by Messrs. Simpson; No. 118, *Spitfire*, sent by Messrs. Simpson; Nos. 153, 154, 155, *Prima Donna*, sent by Messrs. Simpson, Messrs. Dobbie and Co., and Messrs. Watkins and Simpson; No. 31, *Yellow Queen*, sent by Messrs. Dobbie and Co.; No. 36, *Golden Gem*, sent by Messrs. Watkins and Simpson; No. 48, *Morning Glow Improved*, sent by Messrs. Simpson; No. 57, *Fascination Improved*, sent by Messrs. Watkins and Simpson; No. 121, *Afterglow*, sent by Messrs. Simpson; No. 123, *Rembrandt*, sent by Messrs. Simpson; No. 130, *Crimson King*, sent by Messrs. Simpson; No. 136, *Plymouthia*, sent by Mr. Andrews, Public Parks, Plymouth; No. 139, *Carmine Queen Improved*, sent by Messrs. Watkins and Simpson; No. 174, *Yellow King Improved*, sent by Messrs. Watkins and Simpson; No. 181, *Cerise King*, sent by Messrs. Watkins and Simpson; No. 202, *Cardinal*, sent by Messrs. Simpson; No. 239, *Lady Roberts*, sent by Messrs. Simpson; No. 152, *Bonny Lass*, sent by Messrs. Watkins and Simpson.

HIGHLY COMMENDED.

No. 6, *Tom Thumb*, sent by Messrs. Dobbie and Co.; No. 35, *Golden Gem*, sent by Messrs. Simpson; No. 45, *Sunrise*, sent by Messrs. Simpson; No. 49, *Captivation*, sent by Messrs. Watkins and Simpson; No. 57, *Electra*, sent by Messrs. Watkins and Simpson; No. 83, *Felicité*, sent by Messrs. Simpson; No. 75, *Roseum superbum*, sent by Messrs. Simpson; Nos. 92-93, *Rose Doré*, sent by Messrs. Watkins and Simpson and Messrs. Barr and Sons; No. 94, *Queen of Roses*, sent by Messrs. Barr and Sons; Nos. 101, 102, 103, *The Fawn*, sent by Messrs. Simpson, Messrs. Dobbie and Co., and Messrs. Barr and Sons; No. 137, *Carmine Queen*, sent by Messrs. Simpson; No. 156, *Elegance*, sent by Messrs. Barr and Sons; No. 224, *Prince Chamois*, sent by Messrs. E. Webb and Sons; No. 132, *Crimson Queen*, sent by Messrs. Dobbie and Co.; Nos. 24-25, *Purity*, sent by Messrs. Barr and Messrs. Watkins and Simpson; No. 52, *Maize Queen Improved*, sent by Messrs. Simpson; No. 177, *Princess Patricia*, sent by Messrs. Barr and Sons; No. 179, *Isme*, sent by Messrs. Simpson; Nos. 183, 184, 185, *Feltham Beauty*, sent by Messrs. Simpson, Messrs. Watkins and Simpson, and Messrs. Barr and Sons; No. 186, *Cottage Maid* (tall), sent by Messrs. Dobbie and Co.; No. 191, *Cerise King*, sent by Messrs. Barr and Sons; No. 197, *The King*, sent by Messrs. Simpson.

COMMENDED.

No. 167, *Queen Victoria*, sent by Messrs. Barr and Sons.

TRIAL OF CHRYSANTHEMUM MAXIMUM VARIETIES AT WISLEY.

The following awards have been made by the Council of the Royal Horticultural Society to varieties of Chrysanthemum maximum after trial at Wisley.

AWARDS OF MERIT.

Mayfield Giant, sent by Mr. Wm. Brown, Mayfield, Sussex; *Marian Collier*, sent by Mr. W. A. COLLIER, Uplands, Redbourn, Hertfordshire; *Omega*, sent by Messrs. GODFREY AND

SON, The Nurseries, Exmouth, Devonshire; *Kenneth*, sent by Messrs. W. J. STOKES, Hilpert Marsh, Trowbridge, and Messrs. BAKER, Codsall, Wolverhampton.

HIGHLY COMMENDED.—Winnie Stokes, sent by Messrs. W. J. STOKES, Trowbridge.

HORTICULTURAL EDUCATION ASSOCIATION.

OVER sixty members of the Association recently visited the Research Station, East Malling, Kent. Mr. R. G. Hatton, M.A., and his assistants, Messrs. Amos, Grub and Witt, conducted parties, numbering about 20 in each, through the laboratory and trial grounds of the station, and a most interesting and profitable time was spent. The following notes will give some idea of the important work which is done at this station:—

PRUNING TRIALS.

Half Standard Apples, planted in October, 1913. Example:—Lane's Prince Albert (on Crab). Newton Wonder (on Paradise Stock), planted alternately in the rows.

1st Row:—Unpruned after heading back in the first year.

2nd Row:—Pruned, laterals to three buds and leaders to $\frac{1}{2}$, $\frac{1}{2}$ or $\frac{3}{4}$, according to the strength of each.

3rd Row:—Not systematically pruned, but the growth is thinned where too thick, centre of trees kept open, and so on.

4th Row:—Pruned, laterals to one bud and leaders as in 2nd row.

This trial is duplicated over several acres, other pairs of varieties taking the place of the two mentioned above.

It was evident that the first row in each trial carried the most fruit, but there was a good crop of better fruit on the trees in the third row almost without exception.

There was very little fruit on the trees in the second and fourth rows, but growth was much more vigorous.

At a glance, the results show that it is a mistake to prune severely those trees which are used as "fillers" between permanent trees, for it is evident that such treatment delays fruiting for many years, and it is likely that trees so treated would be just coming into profit at the time when they should be removed to make room for the proper development of the other trees.

SELECTING AND PROPAGATING PARADISE STOCK.

It is common knowledge that Apples of any one variety grafted on so-called "Paradise" stocks may be purchased from a nursery, and that these trees will vary in growth, some proving vigorous and some quite the opposite, under the same treatment.

At the Malling Station it has been proved that there is a wide range of root systems of different vigour all passing under the name "Paradise" Stocks in the nursery trade. To begin with, 21 nurserymen's selections were bought in. Only two of these proved to be true; all the rest were mixed and these were sorted into sixteen types. A full account of this part of the work is given in an illustrated pamphlet entitled "A Summary of the Results Obtained in Selecting and Propagating Paradise Stocks," which may be obtained (price sixpence) from the Research Station.

THE INFLUENCE OF DIFFERENT STOCKS ON CERTAIN VARIETIES.

In this trial a plot of eight acres is carrying a number of Apple trees grafted on twenty different types of stocks. Although the trial was only started two years ago, it is evident already that the stock has an enormous influence on the scion which is grafted on to it. For instance, Lane's Prince Albert on Type 16 is very strong and upright in growth; on Type 8 it is very weak, and on Type 9 it is well furnished with blossom buds. After further trial, it will be safe to say which stocks are likely to be desirable or undesirable for special purposes.

THE LABORATORIES.

Here were set out for the visitors' inspection numbers of specimens and photographs illustrating the work which is being done in connection with the Classification of Black Currants, their susceptibility to Gall Mite, and also with regard to the "running-off" or non-setting of the fruit. Mr. Hatton found that growers were at variance with regard to nomenclature, and in some cases two or even three distinct varieties were often sent out under one name by nurserymen. (A full account of this work was published in the *Journal of Pomology*, vol. I., No. 2.)

Specimens of various stocks were also shown so that the different root systems could be compared.

After the inspection the party entrained for Wye, and there were sixty-five people present at the dinner at Wye College in the evening. The Principal of the College, M. J. R. Dunstan, Esq., O.B.E., presided, and, in proposing the toast of "Success to the Horticultural Education Association," he delivered a rousing and inspiring speech, which was greatly appreciated.—Mr. W. P. Wright replied to the toast, and Mr. A. J. Sowman proposed "Success to the College."—The fifteenth annual meeting of the Horticultural Education Association was held in the College Gymnasium on September 16. Fifty-three members were present.

VISIT TO WYE COLLEGE.

On September 17 the Horticultural Education Association visited the South-Eastern Agricultural College and inspected the principal laboratories, under the guidance of Messrs. F. V. Theobald (Entomological), E. S. Salmon (Mycological) and S. T. Parkinson (Botanical).

Mr. Theobald gave an account of his investigations into the life histories of many insect pests, particularly that of a new Raspberry pest allied to the Pear Midge. The small red grubs of this midge attack Raspberry canes, starting at the base of the buds, working downwards and causing the foliage to wither just as the plants are coming into flower. Mr. Salmon showed a series of water-cultures which have been instituted to discover what proportion of potash is actually taken up by plants. When the plant was grown in Detmer's Solution it was found that one-third of the potash was consumed; and when the quantity of potash was doubled the plants only consumed the same amount as before. It is proposed to continue these trials, when other plant food constituents such as nitrogen will be dealt with. Mr. Salmon also answered many questions relating to Silver Leaf Disease. Mr. Parkinson delivered a lecture, illustrated by lantern slides, on (1) The Development of the Apple Flower, (2) The Growth of Apple Seedlings, (3) Budding, and (4) Grafting. Mr. Miskin gave a demonstration on the grading and packing of Apples in the packing shed, and Mr. Chapelow conducted parties through the gardens and fruit grounds.

CONFERENCE ON HORTICULTURAL EDUCATION.

Seventy-two persons, including about sixty members of the Association, representatives of the Ministry of Agriculture and members of the College staff, met in the College Gymnasium at 2 p.m.

Mr. Walter P. Wright, Horticultural Superintendent in Kent and Chairman of the Association, occupied the chair. The Controller of Horticulture (Mr. W. G. Lobjoit) outlined the policy of the Ministry with regard to Horticultural Education and Horticultural Development. At the outset the Controller said he considered that horticulture was a distinct entity. He adopted Webster's definition of the term, and included fruit culture, even when on plantations of a thousand acres. In a very interesting speech, Mr. Lobjoit spoke of the establishment of a special Horticultural Committee in every county in England and Wales, the appointment of a Horticultural Superintendent in each county, and the work to be done

by the committees and superintendent. He also dealt with the development of commercial horticulture under the following headings:—

- (1) Instruction and Advisory Work.—(a) In planting, cultivation and care of crops; (b) The control of diseases—(i.) Propaganda and instruction by County Instructors, (ii.) Control measures by the Ministry; (c) Marketing of produce, grading, packing and distribution.
- (2) The lack of accurate statistics and the necessity for a close investigation into the present state of commercial horticulture before development can proceed on proper lines.

Mr. H. V. Taylor, Deputy Controller, then addressed the Conference on the subject of Demonstration Plots.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

SEPTEMBER 2.—*Present*: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Howes, A. Keeling, D. McLeod, J. McNab, E. W. Thompson, J. Thrower, and H. Arthur (Secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Brasso - Laelio - Cattleya Thyone (B.-C. Leemanae × L.-C. Thyone), one of the finest of all the yellow hybrids of the section. The sepals and petals are deep yellow, and of great texture; the lip is large, beautifully frilled, with a dark centre; *B.-L.-C. Muriel* (B.-C. Maroniae × L.-C. Peronia), a large flower of good colour, perfect shape, with deep yellow throat; both from S. GRATRIX, Esq. *Cattleya Henshallii The Premier* (Dupreana × gigas), a very large flower of rich colour and splendid shape, from P. SMITH, Esq.; *Cypripedium Rosettii Axholme House var.*, the largest type of the flower seen in the north, of perfect shape, from A. FRANCOIS, Esq.

AWARDS OF MERIT.

Cattleya Hardyana alba Axholme House var., *Cattleya Ena var. Albert Francois* (Massiana × bicolor), *Laelio-Cattleya Golden Oriole var. Mdle. Marthe Derihon* (L. Charlesworthii × C. aurea), from A. FRANCOIS, Esq.; *Laelio-Cattleya Britannia alba magnifica* (L.-C. Canhamiana alba × *Cattleya F. M. Beyrodt*); *Laelio-Cattleya Georgius Invincible* (L.-C. Invincible Orama × C. King George), and *Cypripedium Climax* (Aloibiades × Harrisianum), from S. GRATRIX, Esq.; *Laelio-Cattleya Thyone McBean's var.* (L.-C. Ophir × C. aurea), from P. SMITH, Esq.

CULTURAL CERTIFICATE.

To Mr. A. CONINGSBY, for a plant of *Dendrobium Sanderae*.

BOTANICAL CERTIFICATE (FIRST CLASS).

To Messrs. A. J. KEELING AND SONS, for *Eria rhyncostylis*.

GROUPS.

S. GRATRIX, Esq., West Point (gr. Mr. J. Howes), was awarded a Silver-Gilt Medal, and J. J. BOLTON, Esq., Pendleton (gr. Mr. S. Lyne), a Large Silver Medal for collections.

SEPTEMBER 16.—*Present*: Rev. J. Crombleholme (in the chair), Messrs. A. Burns, D. A. Cowan, J. Cypher, J. Evans, A. Hanmer, J. Howes, D. McLeod, E. W. Thompson, and J. Thrower.

Awards.

FIRST-CLASS CERTIFICATES.

Cattleya Eleanor (Hardyana alba × F. M. Beyrodt), a fine flower with pure white segments and broad lip shading into deep magenta, with two large blotches of white and primrose on each side of the column, from Mrs. GRATRIX; *Laelio-Cattleya Serbia Edgemoor var.* (E. Enid × L.-C. St. Gothard), a large flower of a rich red mauve shade, from A. HANMER, Esq.;

Brasso-Cattleya Admiral Jellicoe var. Rosita (Digbyana Mossiae × Lord Rothschild), a large flower, of deep rose mauve colour, the lip gaining in intensity of colour at the outer edge and base, from P. SMITH, Esq.

AWARDS OF MERIT.

Vanda coerulea var. Formosa and *Cattleya Adula var. Sunset*, from Sir H. LEON, Bart.; *Brasso-Laelio-Cattleya Muriel var. Goldcrest* (B.-C. Leemanae × L.-C. Ferrone), from A. FRANCOIS, Esq.; *Cypripedium Rosettii var. Queen Alexandra*, from A. HANMER, Esq.; *Laelia Dayana coerulea*, from P. SMITH, Esq.

AWARDS OF APPRECIATION (FIRST CLASS).

Odontoglossum eximillius var. superba (illustrissimum × eximium), from A. HANMER, Esq.

CULTURAL CERTIFICATES.

To Mr. A. BURNS, for a batch of *Odontoglossum grande*; to Mr. W. W. FIELD, for *Cattleya Adula var. Sunset*.

GROUPS.

A. HANMER, Esq., Burbage, Buxton (gr. Mr. G. Giles), was awarded a Silver-Gilt Medal; A. FRANCOIS, Esq., Doncaster (gr. Mr. D. Pitts), and Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), Large Silver Medals; The Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. E. Marshall), and Messrs. CYEPHER AND SONS, Cheltenham, Silver Medals for collections.

PENRITH HORTICULTURAL.

THE above Society held its annual show in the Drill Hall, Penrith, on Thursday, September 16. This was the first show the Society has held since 1913, and the large increase in the number of exhibits over pre-war figures was most gratifying. Vegetables were well up to the average standard of quality, but Pears and Apples were small. The leading prizewinners were Messrs. HARRISON, of Sandath Hall; BOLTON, of Penrith; JOHNSON, of Carlisle; and ROBINSON, of Sharrow Bay.

Messrs. IERD BROS., Penrith, staged a magnificent collection of Sweet Peas, Begonias, Chrysanthemums, Phloxes, Pelargoniums and stove plants. This was one of the finest exhibits ever seen at Penrith.—C. SHAW, Esq., Eden Hall (gr. Mr. J. Scott), sent a fine display of fruit, including Grapes, Peaches, Nectarines, Apples and Pears.—Messrs. BRITTEN AND SONS had a remarkable collection of over fifty varieties of Apples. Considering the sunless season, many varieties were exceptionally well coloured, particularly Red Victoria and Bismarck.

The Cumberland and Westmorland Joint Agricultural Committee sent a most interesting exhibit from Newton Rigg Farm Institute. Over thirty varieties of immune Potatoes were staged. Outstanding varieties were Arran Rose, Arran Comrade, Bishop, Admiral, and a new early immune seedling. Other items of interest were Apples from the County Demonstration Plots, a large collection of injurious insects, bottled and dried fruit, and specimens of plant diseases.

BRITISH MYCOLOGICAL.

THE twenty-fourth annual meeting and autumn foray of the British Mycological Society was held at Minehead, September 27 to October 2, with Mr. T. Petch as president.

The first excursion was to Horner Woods: about thirty members took part in each day's foray, the party dividing into sections in order to visit spots most likely to provide them with the special groups in which they were interested. Among the more interesting fungi collected on the first day were *Chlorosplenium versiforme*, *Lasiobolus oligotrichus*, *Ascophaea cervarius*, *Podosphaera Myrtilina*, *Myriangium* sp., *Thecospora vacciniorum*, *Hygrophorus subradiatus* var. *lucinus*, *Pleurotus palmatus*, *Coprinus flocculosus*, *Cyphella albivirescens*, and *Merulius tremellosus*.

In the evening the general meeting was held and Mr. Carleton Rea was elected president for 1921. Invitations were accepted to visit Haslemere for the Spring Foray at Whitsun, and Worcester for the next autumn foray. Notice had been given that the annual subscription would have to be raised to £1—the case was so strong that it was with difficulty that some enthusiasts were kept within such bounds!

On Wednesday the woods at Selworthy were visited. Interesting additions to the list of fungi were *Lepiota exoriata*, *Tricholoma columbetta*, *Russula incarnata*, *Poria sanguinolenta*, and *Femsjonia luteo-alba*.

The presidential address was delivered in the evening. In his address, Mr. Petch gave a historical survey of the work which had been done on the fungi parasitic on scale insects, and outlined the results of his study of this group in the tropics, and of his examination of the type specimens and collections in the herbaria of the Natural History Museum, the Royal Botanic Gardens, Kew, Paris, and Berlin, and others kindly loaned by mycologists. Species belonging to the genera *Sphaerostilbe*, *Nectria*, *Calonectria*, *Ophionectria* and *Microcera* are parasitic on *Mytilaspis*, *Lepidosaphes*, *Chionaspis*, *Aonidia*, and allied genera of insects, while *Hypocrella* and *Aschersonia* attack only *Lecanium* and *Aleurodes*. Magnificent paintings of these fungi were exhibited, and specimens of *Septobasidium*, a basidiomycetous genus which in the tropics is usually parasitic on the same scale insects as the *Sphaerostilbe* group. In general, these fungi do not cause any injury to the plants on which they occur, but species of *Septobasidium* may attack the host plant after consuming the scale insects, as in the cases of the Velvet Blight of Tea in Northern India, an undetermined species on Tea in Ceylon, and several species on Tea and Mulberry in Japan. In England, scale insect fungi have usually been found on *Chionaspis salicis* on Willow and Ash, the only recorded exception being *Cordyceps clavulata* on a *Lecanium* on Elm, but it is probable they will be found on the common mussel scale of fruit trees if looked for in the winter. A fine collection of *Myriangium* on *Chionaspis salicis* on Ash was made during the foray. Mr. Petch cited results of recent investigations in Florida on the control of whitefly by means of these fungi, and stated that no case was known of the successful control of an insect pest by the artificial use of entomogenous fungi. The problem which confronted experimenters was that of creating an epidemic of fungous disease among the insects at a time when such an epidemic would not occur naturally. The evidence showed that that could not be done by the mere introduction of the fungus or by spraying with spores from natural or artificial cultures. While he had no intention of denying that it might ultimately be possible to determine what factors governed the incidence of these diseases, and that as a consequence of such knowledge it might be possible to utilise them for the control of insect pests, he held that, at the present time, after nearly thirty years of experiment and investigation, there was no evidence which would warrant the recommendation of any such means of control.

On Thursday, Porlock Woods were visited. Here were added *Pachyella depressa*, *Puccinia Molinia*, *P. Absinthii*, *Hyalospora Polypodii*, *Mileosina Blechnii*, *Uredo Scolopendrii*, *Marasmius Hudsoni* and *Geaster fimbriatus*.

The first paper given in the evening was by Mr. Carleton Rea on the genus *Ganoderma* (Karst.) Pat. This genus is characterised by its shining, resinous, lacate crust and coloured, smooth or rough, oval spores which are truncate at the base. The species may be sessile or stipitate, and in this country include *G. lucidum* (Leyss.) Karst., *G. applanatum* (Pers.) Pat. and var. *lacatum* (Kalkbr.) with verrucose spores and *G. australe* (Fr.) Pat., with its var. *vegetum* (Fr.) Romell, and *G. resinaceum* Boud. with smooth spores.

Mr. J. Ramshotbottom then gave an account of the mycorrhiza of Orchids. The necessity of the fungus symbiont for the germination of most Orchid seeds, the mode of entry of the fungus, and its distribution in the seedling were dealt

with. A series of microtome sections of seeds and seedlings prepared by the late Mr. J. Charlesworth were on exhibition, also a culture of an Orchid fungus and seedlings at different stages provided by Messrs. J. Charlesworth and Co.

The president then gave a short account of a paper on Indian Polyporaceae by Professor S. R. Bose.

A "yeast" cultivated in Tea was exhibited by Mr. Ramsbottom. This organism was first described in 1913 by Lindau, who states that it is regularly cultivated in sweetened Tea by maids, cooks, etc., in certain districts in Russia. The fermented liquid is drunk as a "cure all." He gave to it the name *Medusomyces Gisevii*. Lindau examined it and found that it was a mixture of organisms, those constantly present being *Mycoderma* sp., *Torula* sp., *Saccharomyces Ludwigii* and *Bacterium xylinum*, the latter causing the leathery consistency. No clue to the origin of the "yeast" was obtained by the German writers. The specimen exhibited was brought by a lady who obtained it from a native herbalist in a Himalayan village. It had been regularly cultivated for several years and had great powers attributed to it as a cure for intestinal complaints. A specimen of ginger-beer plant was also exhibited. Old readers of the *Gard. Chron.* will remember the interest that was taken in this "plant" in former years (*vide G. C.*, April, 1884, p. 542). Prof. Marshall Ward (1892) proved that the essential constituents are a yeast (*Saccharomyces pyriformis*) and a bacterium (*Bacterium vermiciforme*), which act symbiotically. There has been for some time past a continuous stream of inquiries as to the ginger-beer plant, never under that name, but always by some (? trade) name as "Californian Bees," "Jerusalem Bees," "Belgian Bees," "Balm of Gilead," etc.—the zoological name being in reference to the "buoyant dancing" of the lumps.

Dunster was visited on Friday, and *Lepiota zymphaeum*, *L. haematosperma*, *Pleurotus corticatus*, as well as many microfungi were added to the list. At the evening meeting a communication was read from Professor A. H. R. Buller on the audibility of the "puffing" in the larger Discomycetes. Reference was made to the statements of Desmazières, de Bary and Stone as to the hissing sound sometimes heard on the discharge of spores. A specimen of *Pustularia caninus* was seen to puff by Professor Buller. On holding it to the ear as one does a shell a distinct sound was heard, like that made by steam when escaping from a tiny jet.

A note by Mr. St. John Marriott on the discharge of the peridiole in *Sphaerobolus stellatus* stated that the greatest distance to which these had been found to be thrown was 12 inches. Mr. R. Paulson then read a paper illustrated by magnificent photomicrographs on the sporulating gonidia of the lichen *Evernia Prunastri*. If the tips of this or any similar foliaceous lichen be examined during a period of active growth the algal cells are seen to be of different sizes and frequently arranged in groups quite unlike what one is led to expect from the text-book descriptions. The algae do not divide vegetatively, but sporulate; eight, sixteen, or even thirty-two spores may be formed. The wall of the mother cell bursts and liberates the daughter cells which are apparently non-motile and are pushed apart by the fungal hyphae. The algal constituent most closely resembles the genus *Chlorella*, and not *Protococcus* (*Pleurococcus*) as is usually thought. Many observations of the author are of extreme importance in considering the relation of fungus and alga in the lichen thallus.

Mr. Ramsbottom exhibited pieces of canvas from the different war areas and from this country showing the spots caused by *Macrosporium* and *Stemphylium*, which caused the rotting of tentage and which is of great economic importance. The methods of treatment which had been in use were briefly commented on.

Many uncommon fungi were exhibited during the meeting, the most interesting of which were the rare phalloids, *Phallus imerialis* (? *iosmus*) collected at Blakeney by Professor F. W. Oliver, and *Clathrus cancellatus* gathered in the Isle of Wight by Mr. W. Johnson.

SCOTTISH HORTICULTURAL.

OCTOBER 5.—The monthly meeting of this Association was held at 5, St. Andrew's Square, Edinburgh, on this date, Miss Burton (president) in the chair. A paper, entitled "Leaves from the Note Book of a Grower of Hardy Fruit," was read by Mr. Robert Scott, The Orchard, Bridge of Allan. The paper, which dealt with a variety of points in connection with the growing of hardy fruits, gave rise to an interesting discussion.

A new Apple, named W. H. Massie, a cross between Rival and Cox's Orange, which was exhibited by Mr. R. Staward, Panshanger Gardens, Hertford, received a First-class Certificate. Cultural Certificates were awarded to Messrs. Dobbie and Co. Ltd., for a collection of Dahlias; Miss Burton, for Chrysanthemums and Michaelmas Daisies; and Mr. A. M. Crabbe, Edinburg, for Michaelmas Daisies and Chrysanthemums. Mr. G. M. Taylor exhibited a blue, kidney-shaped Potato, a bud sport from Edzell Blue variety.

FRENCH POMOLOGICAL.

THE annual congress of the French Pomological Society was held this year from the 9th to the 11th September, at Lausanne (Switzerland). The members, who were present in large numbers, were greeted by their Swiss confrères with the greatest possible cordiality.

Among the papers presented one was read by Messieurs Rivière and Pey on "The Infertility of Certain Varieties of Fruit Trees." A communication was received from M. Nombrot, giving the syllabus of a course of pomology for horticultural schools. On the subject of plant diseases, interesting papers were read by M. Opoix, on fruit disease, and by M. Passy on grey rot and the mummification of fruits (*Monilia fructigena*).

M. Chiffot, of Lyons, presented an interesting monograph on anti-cryptogamic measures, and M. Martinet, of Lausanne, read a paper on the selection of Walnut trees and the production by seedlings of special types suited to various localities and having the required characteristics of hardness and productiveness; also a paper on the local fruits of high altitudes.

M. Chasset gave some details of his pomological "key" for the rapid identification of fruits, with the history of the various classifications. In the "Chasset" method, of which some particulars have already been given in the *Gard. Chron.*, fruits are classed according to their shape, time of ripening, colour of skin, peduncle, flesh, etc.

Numbers of fruits were placed before the members for judging, and some were adopted and incorporated in the list of varieties recommended by the Society. Among others we may mention Strawberry *Souvenir de Désiré Bruneau*, Nectarine *Madame de la Bastie*, and Apple *Belle de Pontoise*.

M. Gustave Chevalier, of Montreuil, near Paris, was elected "lauréat" by the Congress for the year 1920. At the banquet which closed the session, speeches were made by M. Dumuid, President of the Vandoise Federation of Horticultural Societies; by Councillor Porchet; by M. Luizet, President of the Society; and by Dr. Viger, President of the French Agricultural Academy.

An interesting collection of fruits from the cantons of Vaud and Valais was shown at the Congress, and some very agreeable excursions were arranged in the neighbourhood of Lausanne to Vevey, and to Geneva.

TRADE NOTE.

By an inadvertance, we credited Messrs. Alex. Dickson and Sons, Newtownards, with second prize, instead of first, for twenty-four varieties of Roses, in our report of the N.R.S. autumn show.

ANSWERS TO CORRESPONDENTS.

Books: *Spud Book*. *The Book of the Potato*, by T. W. Sanders, published by W. H. and L. Collingridge, 143 and 149, Aldersgate Street, E.C.; and *Pictorial Practical Potato Growing*, by Walter P. Wright and Edward J. Castle, published by Cassell and Co. Ltd., London, would be suitable for your purpose.

CHEIRANTHUS ALLIIONII "GOING OFF": C. A. B. The failure of the plants is probably due to an attack by a fungus, as mycelium was developed in the tissues in abundance, but the fungus had remained sterile, making its identification difficult. It is very possibly a species of *Sclerotinia*.

CORRECTION.—We regret that in our report of the National Rose Society's autumn exhibition (see p. 174) Mrs. Alex. Robinson, Briar Hedge, Bourne End, Buckinghamshire, was stated to have "transferred from the professional ranks." Mrs. Robinson writes: "To the best of my knowledge I have never been in them. I have been, and still am, a most successful amateur. I have entered and gained prizes in open classes, but not as a professional."

LILIUM TIGRINUM: J. P. From the general appearance of the plants we suspect that the trouble is due to the common Lily disease, caused by the fungus *Botrytis*, although the fungus did not develop on the dead stems, as is usually the case.

NAMES OF FRUITS: J. R. 1, American Mother; 2, Royal Russet; 3, King of the Pippins; 4, Fearn's Pippin.—J. M.: Golden Spire.—J. MacM.: Warner's King.

NAMES OF PLANTS: C. B. Red Dutch Honey-suckle (*Lonicera Periclymenum* var.)—B. N. C. 1, *Coriaria terminalis*; 2, *Picea excelsa* var. *monstroza*; 3, P. var. *inverta*.—J. J. C. M. 1, *Cupressus Lawsoniana* var.; 2, *Libocedrus decurrens*; 3, *Thuja orientalis* var. *elegantissima*; 4, *Cryptomeria japonica* var. *elegans*; 5, *Juniperus communis* var. *fastigiata*; 6, J. *Sabina* var. *albo-variegata*; 7, *Cupressus pisifera* var. *plumosa aurea*; 8, C. p. var. *plumosa aurea*; 9, *Pseudotsuga Douglasii*; 10, *Spiraea Lindleyana*; 11, *Sedum spurium*; 12, *Sedum kamtschaticum*; 13, *Sedum Ewersii*; 14, *Alchemilla vulgaris*.—J. D. 1, *Polygonum* sp. probably *vacciniifolium*; 2, Cannot identify specimen sent. Leaves should be included as well as spikes of flowers.—D. H. D. 1, *Oenothera fruticosa*; 2, *Rubus odoratus*.—E. L. *Rhododendron volubile*.—J. H. K.: *Euphorbia Cyparissias* (Cypress Spurge); not a shrub, but a hardy, perennial herb.—M. K.: *Hydrangea Hortensis* var. *Mariesii*.

THE POISON IVY: A. B. The specimen received from you represents the Poison Ivy, *Rhus Toxicodendron*, a plant which causes a kind of blood-poisoning when it is handled by certain people, whereas others can handle it with impunity.

TREES AND SHRUBS: W. J. F. A book that contains most of the information you desire is *Trees and Shrubs Hardy in the British Islands*, by Mr. W. J. Bean. This is in two volumes, and may be obtained through our publishing department for £2 4s., post free.

WALLFLOWERS DISEASED: W. C. and Sons. The plants are badly attacked by *Peronospora parasitica*. The disease appears on such common weeds as Shepherd's Purse and other Cruciferous weeds. Do not plant Wallflowers or other Crucifers on the same ground for a season or two, as the resting spores are liable to infest it. Destroy the affected plants by burning.

Communications Received.—I. R.—Jack—W. R. P.—South Hay.—R. M.—E. M.—Cestria—J. C. W. and S.—A. W.—C. C.—J. E. F.—G. B. M.—A. M. S.—G. C.—H. P. N.—R. P. B.—H. M.—P. M.—A. O.—J. P. and S.—R. E. A.—C. B.—A. J. R.—G. M.—E. J. P.—E. B.—J. B. R.—A. H. L.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 47.4.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, October 20, 10 a.m.: Bar. 30.2, temp. 52°. Weather.—Sunny.

The History of a Grain of Wheat.

Those who heard Sir Daniel Hall's delightful and instructive lecture to the British Association at Cardiff on "The History of a Grain of Wheat from the Seed Bed to the Breakfast Table," will be pleased to know that it is available, albeit in severely summarised form, in the October number of the *Journal of the Ministry of Agriculture*. The starting point of Sir Daniel's address and its recurrent theme was the fact that although long periods of time have elapsed since primitive races of men began to cultivate Wheats, yet even to-day there is no stage in the course of the passage of the Wheat grain from seed bed to table, at which some gap in the knowledge essential to the full utilisation of Wheat as food does not exist. It is one of the prime objects of agricultural research workers to discover the knowledge which shall fill those gaps.

The need for such discoveries is peculiarly urgent at the present time, for there are grounds for believing that the world as a whole is passing through one of those phases in which population increases more rapidly than supply, with a result that dearth is possible and discontent certain. Further, inasmuch as it would appear that the limits of land suitable for Wheat growing have nearly been reached; it is clear that the world must look to increased yield per acre for the increased supply which it requires. Among means for increasing production which are being tried, Sir Daniel referred to the much discussed "electrification" of seed, but was not able on present knowledge to

hold out much hope for the success of the process. Economy and increased efficiency in seed sowing may help somewhat. An average yield from the sowing of about 2½ bushels to the acre, is a thirteenfold one (about 32 bushels). By the present system of sowing in drills, seed is often put in too thickly and since, as is well-known, each plant of a crop requires a certain minimum of space, there is certainly some waste of seed and probably some reduction of crop. It is true that by no method of sowing may we hope to raise a crop which will give on the average anything like the enormous yield of a hundredfold, much less the thousandfold, which may be given by an isolated Wheat plant. Nevertheless, experiments now in progress with an improved drill, which sows not in line but zigzag, as is sometimes done with vegetable seed, are said to show an economy in seeding of 1½ bushel per acre, one bushel serving in lieu of the usual two and a half bushels for an acre of land. Even if the reduction were only 1 bushel per acre it would, if it can in fact be accomplished, mean a gain of 3 per cent. of the Wheat output, and would present in this country a money value of over one million pounds sterling per annum. Sir Daniel referred to the uselessness of "selection" from among self-fertilised plants of a given variety as a means of improving the type, and described the method of cross fertilisation as a way of producing new varieties possessed of better qualities than those of existing varieties and cited such varieties as Little Joss and Yeoman, raised by Prof. Biffin, of Cambridge.

With respect to the latter variety, he made the interesting statement that the introductions of the Yeoman Wheat has raised the average yield in many farms in the Eastern Counties by so much as 10 per cent. Much further breeding work remains to be done before varieties suitable to all the different soils and climates of this country can be produced. The value of Wheat as the chief source of food, lies not only in the nutritive value of the grain, but also to the fact that it is one of the plants which will give a yield even though it be sown under unfavourable conditions. That this is so, is illustrated by the fact that at Rothamsted Wheat has been grown on one plot continuously for 77 years without any manure, and still yields 12 bushels per acre—approximately the average crop of all the Wheat lands of the world. This adaptability of Wheat is the reason also that it is *par excellence* the crop for breaking in the wilderness. The new settler takes a succession of Wheat crops on virgin land before he resorts to mixed farming. One of the most important of the yet to be solved problems of Wheat growing, is that of lodging. In this country in particular it is not easy to get Wheat to stand up in richly manured land. The problem is undoubtedly complex; questions of soil, climate, variety, time of sowing, all come in, and must be considered in many attempts to discover means of preventing this defect. It is, therefore, well to know that this problem is to be tackled by the many different agricultural researchers in this country, and it can scarcely be doubted that the results of their work will be to reduce the present serious loss from lodging. For the reasons respecting demand and supply, Sir Daniel concludes that the need for growing more Wheat in this country is a real one, and believes that we shall be able to do this both by extending the average and increasing the yield. To ensure the latter, research must be encouraged, for it is on research that our power to yet further increase the yield per acre depends.

The New Secretary of the Ministry of Agriculture.

The appointment of Mr. F. L. C. Floud, C.B., to the post of Permanent Secretary of the Ministry of Agriculture, marks the end of the period of reconstruction of the Ministry which was inaugurated at the termination of the war. During the war years it fell to Sir Daniel Hall to discharge the manifold duties of secretary, and also to advise the President on all important matters of policy. In this work he retained and augmented the admiration and affection of all those who were aware of his fine judgment and imperturbable temper—as one who locks on tempests and is never shaken. When peace came and it was decided to develop largely agricultural research and education, it was recognised that no one could do this all-important work better than Sir Daniel. At the same time it was evident that the task of developing a system of agricultural research and education adequate to the requirements of this country must engage the whole attention of the man in charge of the work. Above all, he must be free from the innumerable and incessant calls which routine duties make upon the time of the administrative head of a Ministry. All who are aware of the admirable work which Sir Daniel has already accomplished in establishing a national research service for agriculture, will be glad to learn that as Director General of the Intelligence Department and Chief Scientific Advisor, he will be able to devote himself entirely to the work of advancing research and education. They will also be glad to know that the office of general secretary has been conferred to Mr. F. L. C. Floud, who by common consent has proved himself one of the ablest administrators in the Civil Service. Those who were in a position to observe the excellence of the work which Mr. Floud did during the war in the Food Production Department, could not fail to be convinced of his fitness for this new post. He possesses all the qualities which go to make a great administrator: ability, energy, sympathy, and discretion. For our part we are convinced that the appointment is one of good augury for the Ministry, and that with two such officers as Sir Daniel Hall and Mr. Floud, Lord Lee will find his heavy burden lightened, and the Ministry will rapidly come to enjoy the esteem of the general body of agriculturists which in the past, and in spite of the excellence of its work, was too often denied it.

Kent Commercial Fruit Show.—The Kent Commercial Fruit Show will be held at the Agricultural Hall, Maidstone, on October 26, 27 and 28. Entries already received promise to provide a splendid display of home-grown Apples, while educational exhibits will be special features of the show. At the official luncheon, to be held at the Corn Exchange, on October 26 at 1 o'clock, Colonel F. S. W. Cornwallis, Linton Park, Maidstone, will preside. For the convenience of exhibitors luncheon tickets may be obtained (price 5s.) from Mr. W. Miskin, hon. sec., Wye College, Kent.

Loss of Fragrance in the Musk.—An interesting observation on the loss of fragrance in the Musk is published in *Nature*, October 14, which states that Mrs. W. H. Cope, joint secretary of the Birmingham Field Naturalists' Club, has observed a similar absence of perfume from all the Musk plants which she purchased in the open flower market this year. The observation was corroborated by other members of the club and a suggestion made that the loss of odour was due to the atrophy of scent-producing cells consequent on a change in the type of insects by which fertilisation was effected.

Summer Weather.—The delightful weather of the past few weeks has made some amends for the gloomy summer, and it has been appreciated by no one more than the gardener. Not only has the season of such tender crops as Marrows and Runner Beans being prolonged, but the displays of Dahlias were never finer or the plants so uninjured by the weather at so late a date. Roses and other flowers are continuing in bloom, making the garden almost as gay as in July and August, whilst the brilliant sunshine is ripening the wood of fruit trees and maturing the crop of outdoor Tomatos. In addition to all these benefits, gardening has been rendered easier where the staff is still depleted, for such work as housing tender plants from the flower beds, arranging the greenhouses and conservatories for winter, and lifting Dahlias are usually matters for urgency before the advent of October. The soil is in splendid condition for planting and the fine weather has enabled nurserymen and others to make good progress with this important work.

M. Viger.—Some of our readers may remember the recent nomination, to the rank of Officer of the Legion of Honour, of M. Viger, President of the National Horticultural Society of France. As is usual on such occasions his colleagues have organised a banquet, at which M. Viger will be fêted and presented with a souvenir of the interesting event. Those who wish to take part in the presentation should apply to M. Février, Treasurer of the Society, 84, Rue de Grenelle, Paris, before the 25th instant. The banquet will take place at M. Dehouve, Jeune, 91bis, Avenue de Neuilly, two days subsequently.

Gardener's Golden Wedding.—Mr. and Mrs. George Irving, The Gardens, Nunbank, Dumfries, celebrated their golden wedding on October 15. They were married at Highlaw, Lockerbie, in 1870. For about 23 years Mr. George Irving was gardener to Sir James Fergusson, Spittalfields, West Linton. He was formerly gardener to Colonel Threshie, Barnbaroch, Dalbeattie, but on the reduction of the establishment there, entered into the employment of Messrs. Jas. Service and Sons, Maxwelltown. Fourteen years ago he was appointed gardener to the Misses Maxwell, Nunbank, Dumfries, which post he still retains, though upwards of 70 years of age. Among the many presents received was a handsome gift from the Misses Maxwell. Mr. Irving is much esteemed in the locality and has received many congratulations on this interesting occasion.

Cost of Potato Lifting.—The Department of Agriculture of Leeds University recently carried out experiments to ascertain the value of implements in lifting the Potato crop. Experiments showed that with the use of the Potato digger the cost of lifting the crop worked out at £2 6s. 6d. per acre, or 4s. 8d. per ton, as compared with £6 16s. 8d., or 13s. 8d. per ton, when dug by forks.

End of Summer Time.—The Home Secretary gives notice that it is not proposed to make any further extension of Summer Time. Summer Time will therefore cease, and normal time will be restored, at 3 a.m. (Summer Time) in the morning of next Monday, October 25, when clocks should be put back to 2 a.m. The hour 2.5 a.m. Summer time will thus be followed by the hour 2.3 a.m. Greenwich Time.

The Garton Lectures at Edinburgh.—In opening the Garton course of lectures on Colonial and Indian Agriculture in Edinburgh University on October 14th, Professor Wallace said it was twenty years since the lectures were established under a liberal endowment by Messrs. John and Robert Garton, of Newton-le-Willows, now of Warrington. Like the results of the Rothamsted Experiments, "which have revolutionised agricultural science and practice in all parts of the world," the results of the scientific investigations in plant breeding inaugurated by Mr. John Garton have supplied the British and Colonial crop growers with a large majority of the new Oats, which yield several quarters per acre more than the

old varieties, and many of the best-known and most widely grown varieties of other crop plants. The great secret of the success of the Garton system of plant breeding was due to the introduction of multiple crossing, involving, in numerous instances, the blending of wild and weedy but robust and vigorous species, and also to the regeneration resulting from the use of pollen from different plants within the same species. By these means the tendency, however slight, to degeneration, which is liable to occur among self-fertilised and thus intensely in-bred crop plants, is overcome, and increased vigour and crop-producing power is obtained. Success in growing the new and regenerated varieties demands a higher standard of agricultural practice, including more liberal seeding and manuring.

Royal Recognition of the Gardeners' Royal Benevolent Institution.—Her Majesty Queen Alexandra has again donated the sum of £20 from the results of "Alexandra Day" to the funds of The Gardeners' Royal Benevolent Institution.

Hay Fever in the East Stated to be Due to the Pollen of a Privet.—Hay fever in Hong Kong is, in the opinion of the medical profession in the colony, due to the pollen of *Ligustrum sinense*. This shrub flowers in the early part of the year, when hay fever is prevalent in the district. The pollen of *Ligustrum vulgare* is stated to be one of the causes of hay fever in this country, and it is quite possible that the pollen of the Chinese species may be one of the causes of the malady in Hong Kong. To prevent the pollen of the shrub from causing any ill effects, the flower-buds have been cut off for the past two or three years in the Hong Kong district, before they have had time to open.

Cane and Beet Sugar.—Cuba exported 824,000 tons of sugar to the United Kingdom in 1918, which is slightly below the amount of Beet sugar received from Germany in 1913. In that year Beet sugar to the total of 1,510,000 tons was exported to this country, principally from the Continent, but in 1918 only 14,000 tons were received, the exporting country being Holland. As showing the increased amount of cane sugar at present used in the United Kingdom, no fewer than 1,295,000 tons were imported in 1918 compared with 320,000 tons in 1913. Figures given in the *Trinidad and Tobago Bulletin* show the enormous increase in the consumption of sugar during the past 60 years. In 1860 the production of cane and Beet sugar was 1,250,000 tons and 250,000 tons respectively, whereas in 1913 the figures had risen to 9,000,000 tons and 6,800,000 tons respectively.

Phosphate from the Pacific Islands.—Professor W. Somerville, of the School of Rural Economy, Oxford University, lecturing recently before the National Farmers' Union at Tonbridge, stated that in view of the new method of treating iron ore the supply of basic slag promised to be limited in the future. There was, however, an unlimited supply of mineral phosphates, whole mountains and islands in different parts of the world containing enormous quantities of this material. This country has lately acquired islands in the Pacific containing enormous deposits of phosphates, and the Ministry of Agriculture expresses the opinion that this mineral phosphate may be put on the market at 2s. per unit, which is half the price of basic slag.

Aphides and Plant Disease.—Experiments carried on in the United States* show that aphides are the chief means whereby mosaic disease of Potatoes is spread. So long as the plants are protected from aphid attack, the disease shows little or no increase even though plants infected with mosaic disease are intermixed with unaffected plants; but if aphides are allowed access to the plants the mosaic disease spreads rapidly.

* "Transmission of the Mosaic Disease of Irish Potatoes." E. S. Schultz and D. Folsom, *Journal of Agricultural Research*, XIX., 7; Washington, July 1, 1920.

Pruning Newly Planted Fruit Trees.—Experiments in pruning conducted over the past twenty years at the University of Missouri College of Agriculture, U.S.A., shows that the best results are obtained when the branches are cut back in the fall (autumn). This holds true for young trees generally, whether they are transplanted in the fall or spring, or are not transplanted. From experiments conducted at the University in 1900 and 1901, it was found that there was little difference in the water contents of Apple trees transplanted in the late spring and those which were not transplanted. Also that trees, the branches of which were pruned back in the late autumn, contain on the average slightly more water than those which have been allowed to retain their branches. While this difference is not great, it shows that the pruned branches did not suffer from moisture passing out through wounds, but, on the contrary, the pruned trees dried out slightly less than those which were not pruned.

British Pteridological Society.—We learn from the recent issue of *The British Fern Gazette* that, after a lapse of six years, the British Pteridological Society has held a general meeting and that new officers have been appointed as follows:—Mr. W. B. Cranfield, of East Lodge, Enfield Chase, Middlesex, who has carried out the duties of Hon. Secretary and Treasurer since the death of Mr. C. T. Drury in 1918, becomes President and Hon. Treasurer. Mr. Charles Henwood, of 21, Clifton Road, Maida Vale, London, W., is the new Hon. Secretary, while Mr. W. H. Phillips, Hollywood, Co. Down; Mr. J. J. Smithies, Kendal; Mr. Alex. Cowan, Penicuik; Rev. Canon Kingsmill Moore, Dundrum, Ireland; and Dr. F. W. Stansfield, Reading, are Vice-Presidents. Dr. Stansfield is the Editor of the Society's publication, *The British Fern Gazette*. Preliminary arrangements have been made for holding the annual meeting of the Society in 1921 at Chard, Somerset.

Appointments for the Ensuing Week.—Tuesday, October 26: Kent Commercial Fruit Show at the Agricultural Hall, Maidstone (3 days). Wednesday, October 27: Portsmouth Horticultural Society's Show (3 days); The Borough of Croydon Chrysanthemum Society's Show at the Central Baths Hall, Scarbrook Road, Croydon (2 days); Ormskirk Potato Society's Meeting (2 days). Thursday, October 28: Royal Botanic Society's Meeting.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Thin Sowing.*—Having in June last sent you an account of my having dibbled an acre of land with Wheat (a single seed in each hole), in the autumn of last year, and having received many letters from agriculturists on the subject, who had read the account, I am now anxious to lay the produce of that acre before the public, through the same source of communication. Half the acre was dibbled with Spalding's Red Prolific Wheat, and the other half with a very fine white Wheat; the seed dibbled on the entire acre measured 1 peck and 1 pint. The produce is as follows:—The half acre dibbled with Spalding's Prolific produced 8 sacks, 3 bushels—a very fine sample, with 1 ton, 10 cwt. of straw. The half-acre dibbled with the White Wheat produced 5 sacks, 2 bushels—a very fine sample indeed—with 1 ton, 2 cwt. of straw. The Wheat stood 5 feet 6 inches in height, was even all over, and was never in the least laid by either wind or rain. I consider the above to be the most extraordinary produce, and well worthy the attention of agriculturists. (We think so, too, indeed!) The land it was grown upon was dunged for Potatoes in the spring. The soil is light and sandy.—*Samuel Hay, Cliffe Hall, Market Laverton, Derizes. Gard. Chron., October 25, 1845.*

Publication Received.—*Home Landscapes* By W. Robinson. 2nd edition. London: John Murray, Albemarle Street, W. Price £3 3s. net.

NEW AND NOTEWORTHY PLANTS.

KNIPHOFIA IRVINGII.

GARDEN hybrids of *Kniphofia* are numerous, and, according to Mr. N. E. Brown, not a few of the wild species, so called, are of hybrid origin. Some years ago a hybrid between *K. pauciflora* and *K. Macowani* was raised at Kew, and was named *K. kewensis* (see *Gardeners' Chronicle*, 1893 (2), p. 424).

A series of hybrids obtained from *K. corallina*, *K. rufa*, and *K. Macowani* was distributed by Messrs. Krelage under the collective name of *K. gracilis*. These hybrids are all elegant plants, with grass-like foliage and slender spikes of yellow and red flowers. Yet another hybrid of the same group has been raised at Kew from *K. brevifolia* (remarkable for its short-tubed white flowers), and the well-known scarlet flowered *K. Macowani*, and as it has real merit, and we have named it *K. Irvingii*, after the raiser.

This hybrid first flowered in 1911, and this year it has been much admired, having formed a nice tuft with numerous spikes, from two feet to three feet high, of bright yellow flowers, the uppermost tinged with red. It is a better plant than *K. rufa*, indeed it might well be called a yellow *K. corallina*. These grass-leaved *Kniphofias*, species and hybrids, constitute a group of elegant free flowering border plants, and *K. Irvingii* is one of the best of them. Preparations for a good bed of it are being made at Kew, where *Kniphofias* are well represented. W. W.

NOTICES OF BOOKS.

* The Rock Garden.

THE above book was first published in 1913 as *The Small Rock Garden*, but now embraces bog and water gardening, the moraine, wall gardening, and other adjuncts to a well-appointed garden. The author begins well in the selection of a site for the rock garden entirely in the open and away from the root-spread, the shade and drip of trees. He might also have added that leafy branches throw off the rainfall in summer, entailing constant watering with very partial success. The information imparted with respect to soils, stones, rockery building, constructing a moraine, building walls for plants, alpine houses, frames, propagation, planting, etc., is full and in the best vein from the pen of a skilled cultivator. Lists of plants for all purposes are tabulated, but the list of plants for the bog garden might have been extended to include the easily-grown *Calthas*, *Myosotis palustris*, Japanese and other Irises, species of Orchids and other favourites. In addition to bogs and moist woodlands as sites it might have been stated that *Primula japonica* and its allies may be cultivated with success in good, friable soils on the north aspect of a garden wall. Printers' errors are very few, unless the use of capital and small letters indiscriminately for adjectival words derived from proper names may be put in that category. For instance, *Anemone Robinsoniana* would follow the ruling of the Vienna Congress, but *Iris bakeriana* and *Saxifraga burseri-ana* would not, though more correct Latin. The specific names of *Escallonia Langleyensis*, *Saxifraga Kestonensis*, *Juniperus Hibernica* and *Cytisus Kewensis* should have commenced with a small letter, just as *Adonis amurensis* does here. Capitals for old generic names, when used for the names of species, are disregarded. *Aizoon*, *Cotyledon* and *Achillea Millefolium* being instances where the word begins with a small letter. These are small matters for the cultivator, however, and do not detract from the utility of the book. Printing and paper are good; one coloured plate and numerous reproductions of photographs greatly enhance the value of the work.

* *The Rock Garden*. By E. H. Jenkins. London: Published at the Offices of *Country Life*, Ltd., 20, Tavistock Street, Covent Garden, W.C.2, and by George Newnes, Ltd., 8-11, Southampton Street, Strand, W.C.2. New York: Charles Scribner's Sons, 1929. Price 7s. 6d.

NOTES FROM KEW.

ILEX VERTICILLATA.

ILEX (PRINOS) VERTICILLATA, the Winterberry of Eastern North America, takes the place of our common Holly for home decoration in the United States, as the winters, in U.S.A. are much too severe for the evergreen *I. aquifolium*. This deciduous Holly (see Fig. 93) is such a distinct and attractive shrub from now until Christmas that much more use might be made of it in shrubbery borders, pleasure grounds and parks. The average height of the plants at Kew is six feet to nine feet, forming wide, spreading, twiggy bushes, at present gay with shining scarlet berries. Frequently unisexual, it is desirable to plant the Winterberry in colonies to facilitate pollination.

BERBERIS POLYANTHA.

With so many new *Barberies* from China, the difficulty is to know which are the best

ELAEOAGNUS UMBELLATA.

This interesting shrub is carrying an abundant crop of fruits this autumn. *Elaeagnus umbellata* is a native of the Himalayas, China and Japan, where it forms a tall, wide-spreading shrub, 20 feet high. Green above and silvery beneath, the leaves have an effective sheen when swaying in the wind. The small, creamy-white flowers are abundantly produced during May and June, though it is in autumn when the bushes are so conspicuously interesting and attractive. The globose fruits are freely borne in clusters on spurs along the branchlets, ten or twelve together being not uncommon. They are $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter, wine coloured, copiously sprinkled with silver dots. Birds are fond of them.

AESCULUS INDICA.

This Indian Horse-Chestnut is now maturing a good crop of fruits. In addition to flowering a month later than the Common Horse-Chestnut, the luxuriant, dark-green



FIG. 93.—FRUITING BRANCHES OF *ILEX VERTICILLATA*.

and most distinct for general cultivation. Both in flower, and more particularly in fruit, *B. polyantha* is one of the most showy species. It forms a spreading bush, seven feet to nine or ten feet in height, and the yellow blossoms are very freely produced in drooping panicles during June and July. In autumn the green fruits gradually change to creamy yellow and then to a glowing scarlet-red. The berries are frequently developed in clusters of more than one hundred, and in shape the cluster is suggestive of a miniature bunch of Black Hamburgh Grapes. The branches are usually weighed down by the profusion of the large clusters of fruits. *B. polyantha* was discovered by Mr. A. E. Pratt, in 1899, in Szechuen, and was introduced by Mr. E. H. Wilson in 1904.

foliage is suggestive of sub-tropical vegetation, and in marked contrast to the autumn tints of the falling leaves of other adjacent species.

ACER GRISEUM.

THIS Chinese Maple promises to be a very interesting and attractive addition to the list of plants suitable for pleasure grounds. In summer the dark green, trifoliate leaves are ornamental, changing before falling in autumn to rich red. During winter the tree might be easily mistaken for a Birch, the cinnamon-brown bark peeling or flaking off and showing the lighter colour of the new bark beneath. The species grows at 4,000 feet to 6,500 feet elevation in Western Hupeh, from whence Mr. E. H. Wilson introduced it, first in 1901 and again in 1907. He describes it as a tree up to 40 feet in height. A. O.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BAISCOE, Gardener to W. R. LISAUGH, Esq.,
Castleford, Chepstow.

Laelio-Cattleya.—Many of these Orchids are developing their flower scapes, which need to be neatly staked. When in bloom, it is a good plan to arrange the plants at one end of the house, where their immediate surroundings may be kept fairly dry, otherwise the flowers may suffer some disfigurement from damp. This remark applies to all the Cattleya family. Others that may be developing their pseudobulbs should be afforded copious supplies of water, and especially plants that have filled their receptacles with roots. Any that need fresh soil may be repotted, but newly-potted plants require very careful watering at this period of the year. Arrange them at the warmer end of the house, where they may be examined easily.

Cypripedium.—*Cypripediums* will soon be making a bold display, and each stem should be neatly staked before it begins to bend over with the weight of the bud. The roots should be kept moist, and thrips held in check by an occasional fumigation of the house. Specimen plants of the insigne type, and such hybrids as *Leeanum*, may be used for dwelling-house decoration; the dry atmosphere will do them no harm for ten days or a fortnight.

Aërides and Allied Genera.—Such Orchids as *Aërides*, some of the *Vandas*, *Angraecums* and *Saccolabiums* will need less water than hitherto, and where the *Sphagnum*-moss has become unduly long a portion of it may be removed. When the tips of the roots are sealed over, the plants will only need water in sufficient quantities to prevent the leaves showing signs of distress. Some of the small-growing species, such as *Angraecum citratum*, will need to be kept a little moister than the stronger growing kinds. The *Stanhopeas* have completed their season's growth and will only require water at rare intervals; the same treatment will suit *Odontoglossum citrosum* when its new pseudobulbs are fully matured. A slight shrivelling of the pseudo-bulbs need cause no anxiety, for they quickly regain their rigidity when given more generous treatment in the spring.

PLANTS UNDER GLASS.

By JOHN CUTTS, Foreman, Royal Botanic Gardens,
Kew.

Rhododendron indicum.—Indian Azaleas that were forced early last season, and thus finished their growth correspondingly early, with flower-buds well set before they were stood out-of-doors, will again be available for early forcing. Before taking the plants indoors, make sure that they are free from thrips; when under glass frequent fumigations will keep them clear of this pest. The later flowering varieties may, with advantage, be left out of doors until the end of the present month, but it is advisable to arrange them together, to permit of covering them overhead easily when frost threatens. Wintering them in a cool house having a north aspect will have a retarding effect on growth, and they may thus be had in flower over a long period by introducing them into heat as required. The forcing may be continued until spring, when they will flower naturally without the use of fire-heat. The small-flowered *obtusum* and its varieties force very readily, and may easily be had in flower by Christmas. *R. Kaempferi* and its varieties are very beautiful plants, and may be forced readily. Some of the freer-growing varieties make long, slender sprays, which are suitable for use as cut blooms, and will keep fresh in a cool room for over a week. Although hardy in the south, they flower so early that the trusses are often injured by spring frosts.

On this account they are well worth cultivating in pots, in which they flower with wonderful freedom, and last much longer in bloom than the large-flowered Azaleas. Some of the best of the large-flowered sorts for early flowering are *Mme. Petrick*, *Deutsche Perle*, *Prof. Walters*, *Simon Mardner*, *Mme. Jos. Vervaeue*, *Vervaeueana* and *Presd. O. de Kerchove*.

Herbaceous Calceolarias.—These plants should be potted on as they require it. Use a light, rich compost and, if available, mix a quantity of old Mushroom-bed manure with the potting soil. These *Calceolarias* need a cool, moist atmosphere at all times, and fire-heat is only necessary to keep out frost. They should be fumigated lightly occasionally, as they are very subject to attacks of green fly. The pest usually starts on the bottom leaves resting on the surface of the soil. They are thus, to a great extent, protected and difficult to eradicate. The shrubby varieties that are propagated by means of cuttings should be potted as soon as they are rooted. It is often difficult to obtain good cuttings from plants that have done duty in the conservatory. It is a good plan, therefore, to take cuttings from the first-rooted batches; such shoots root more readily, grow more freely, and soon make much better plants than those raised from harder cuttings. Where large specimens of *Calceolaria Burbridgei* are cultivated for winter flowering they should now be ready for transference to their flowering pots, which should be ten inches in diameter. The plants should make fine specimens, some four feet high.

Anchusa italica.—The *Dropmore* variety of *Anchusa* is suitable for greenhouse decoration. Place several strong crowns in an eight-inch or ten-inch pot.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weoboe
Castle, near Cardiff.

Asparagus.—The stems of *Asparagus* should be cut off close to the ground level. Any seeds that have fallen should be collected and removed, otherwise they will germinate and prove a nuisance in the future. After thoroughly clearing the beds of weeds and other rubbish spread a light covering of soil, taken from the alleys between the rows, over the surface. Dressing with farm manure in the autumn is not advisable, as this has the effect of keeping the ground wet and cold throughout the winter with a retarding effect on growth in the spring. Crowns intended for forcing early should be lifted and placed on a gentle hot-bed, covering them to a depth of three inches with light soil, and afterwards watering them. A humid atmosphere and a temperature of 60° should be provided.

Lettuce.—Plants in a fairly forward state in the open should be lifted and transferred to a cold frame or temporary structure where they can be protected. In doing this retain as much soil at the roots as possible. Seedlings sown later and intended for wintering in the open should be transplanted in their permanent position. Grow them in well-drained, light soil on a border facing south or west, spacing them nine inches apart each way.

French Beans.—French Beans in pits should be watered with liquid manure on frequent occasions and the pods gathered as they become fit to prevent exhausting the plants. During open weather continue to ventilate the pit freely both day and night. September-sown plants in pots should receive similar treatment. As large crops cannot be expected during the winter frequent sowings should be made. Keep the plants sturdy by placing them, near the roof-glass in a house where a night temperature of 60° can be maintained. Syringe the growth frequently with soft water and support the shoots as required.

Winter Greens.—The whole of the Brassica crops should be cleared of yellow and decaying leaves, also weeds. Rake the ground afterwards, and leave it thoroughly clean.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Planting.—The planting of young trees under glass, and especially those from the reserve garden, may follow closely the work of root-pruning, as many of these prepared trees will be fit for removal by the end of October. Home-grown trees should be prepared for lifting by giving the roots copious supplies of water. Trees obtained from nurseries cannot be planted quite so early, but the selection should be made, and the order sent in good time.

Melons.—If there is no promise of the late plants maturing their fruits they should be removed to make room for Cucumbers or some other crop. On the contrary, if good pits are still available a high temperature and dry atmosphere are necessary to develop a good flavour in the Melons. During the past few weeks there has been sufficient sunheat to raise the temperature of the pits sufficiently to permit of a little ventilation. Caution is required in watering and damping in order to obviate risks of the fruits cracking. Fruits which do mature will keep much longer in good condition, after being cut, in a dry room than earlier in the season.

Strawberries.—Pay careful attention to the watering of the plants, especially during bright and dry, windy weather, as the pots are filled with roots. If the latter are allowed to get dry at this early date no after-management can make good the injury done to the plants. Keep the pots clear of weeds and runners, and see that the roots do not make their way into the material the plants are stood on. If the late autumn proves very wet the best place for these plants is in the open; in some cases it is a good plan to place them on a trellis. They may remain in this exposed situation until the advent of frost and snow, when the pots should be plunged to their rims in ashes. It is a mistake to coddle the plants through the winter. Gentle excitement now is unfavourable to vigorous bloom and perfect fertilisation later.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to O. A. CAIN, Esq., J.P.
The Node, Codrington, Welwyn, Hertfordshire.

Damsons.—The Merryweather is one of the best Damsons for quality and size, and also for cropping when the trees are in the young stage. Bradley's King and Shropshire Prune are two other excellent varieties, whilst Farleigh Prolific is a heavy cropper, but the fruits are small.

Cherries.—By selecting suitable varieties it is possible to grow these fruits in any aspect. For the early varieties choose a warm, protected situation. East and west walls may be chosen for mid-season fruiters, while walls facing north may be planted with later varieties. The following list comprises some of the best sorts, and will provide a succession of fruits:—Early Rivers, Bigarreau Jaboulay, Bigarreau de Schrecken, Frogmore Bigarreau, Knight's Early Black, May Duke and Late Duke.

Preparations for Planting Apple Trees.—Ground intended for the planting of Apple trees should be deeply trenched. Farmyard manure should not be incorporated with heavy soils; rather work in old mortar rubble and ashes from the garden fire. If, however, the soil is poor and resting on a gravelly subsoil, a little well-rotted manure may be used with advantage. Almost any garden soil will grow good fruit, but clayey or calcareous loams are preferable. Where soils are not of the best for the growing of fruit, I strongly recommend planting the trees in prepared compost, good loam for preference. Where this material is not obtainable, trimmings from garden paths, stored as previously advised, and mixed with old mortar rubble, and wood ashes, with bone meal added, will greatly assist the young trees to grow vigorously during their first few years. In no case is it wise to plant

under the shade of large trees, as this will not only prevent the sun from reaching and ripening the wood in autumn, which is important, but the roots of the other trees would rob the fruit trees of moisture and nourishment. Efficient drainage is very important, and must be provided where necessary. Trees will not thrive with stagnant water at their roots.

Morello Cherries.—Where insufficient wall space does not permit of planting Morello Cherries on walls, in some districts the trees may be grown as half-standards in the open.

Peaches.—There are many excellent varieties of Peaches that will give a long succession of fruits in the open, and it is perhaps a difficult matter to decide which varieties to plant. The following sorts will give a succession of fruits throughout the season:—Duke of York, Hale's Early, Early Grosse Mignonne, Peregrine, Dymond, Sea Eagle, Late Devonian, and Golden Eagle.

Nectarines.—A select list of Nectarines for planting includes such varieties as Early Rivers, Lord Napier, Elruge, Pine Apple, Humboldt, and Spencer.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Odd Corners.—The season for material alterations has arrived and most schemes may be put in hand forthwith. Satisfaction is less easily obtained with regard to odd corners than in most garden sites. Sunk gardens, whether of square, oblong, or round design, offer great possibilities and may be treated to suit most corner sites enjoying an aspect other than northern. Comparatively small sunk gardens, which reveal themselves only on immediate approach, have a distinctive charm and provide a happy retreat on sunny spring days. Simple designs are to be commended.

The Reserve Garden.—When laid out in a practical manner, the value of a reserve garden cannot be over-estimated. There is a natural tendency to crowding in the ordinary mixed border, and in this manner many of our choicest flowers are not grown under ideal conditions: moreover, propagation, soil adjustment and trials are more easily effected in the reserve garden than elsewhere. Choose an open, sunny position: mark out the beds from 4 feet to 6 feet wide, and form cinder pathways of sufficient width to give free working facilities. Unedged beds are simple and easily cultivated. Thoroughly trench and enrich the soil before planting, and make provision for an adequate supply of water. After the first season of planting, a system of rotation will greatly benefit most species and incidentally keep the garden fresh and interesting. Deep-rooted plants may take the place of surface-rooting kinds and vice-versa. Pinks, Carnations, Lilies, Delphiniums, perennial Lobelias, Phloxes, Sweet Williams, Erenuri, Chrysanthemums, Irises, and a host of others may each be planted in separate beds and given individual attention. The supply of cut flowers is thus augmented, and suitable plants in variety are to hand for furnishing the garden proper. The boundary of the reserve garden may be formed with Conifers and various shrubs.

Rotation.—A change of ground is as necessary in the successful cultivation of flowers as in any other branch of gardening. Annuals especially enjoy fresh ground, whilst *Violas* seldom thrive satisfactorily on the same unrenovated site for a long period. Suitability of position, in regard to height, form, and colour often impedes rotation: this may be overcome by lifting the plants, thoroughly trenching the site, and adding new soil before replanting. Soils containing plenty of humus should be well limed, provided subjects which dislike lime are not to be planted. Basic slag is a desirable fertiliser to incorporate with the soil, but, like lime, should not be placed in direct contact with farmyard manure. Tree-roots are often a source of trouble in flower borders; if large trees are in the vicinity, the present is a suitable time to inspect the borders and remove intruding roots.

TREES AND SHRUBS.

EUCALYPTUS GUNNII.

I ENCLOSE a small photograph (see Fig. 94) of a specimen of *Eucalyptus Gunnii*. The tree was raised from seed sown in 1914 and is now 22 feet high, with a stem 16 inches in circumference 6 inches above the ground. The seedling was planted, from a pot, on the top of a rock-work bank at the end of a lawn. I have been told that *Eucalyptus Gunnii* is not supposed to be hardy; the plant here has been crippled on two occasions by adverse climatic conditions during winter, but in each succeeding spring it has grown freely again. Some further details as to the hardiness of *E. Gunnii* would be interesting. W. H. Shaw, *The Gardens, Champions, Limpsfield, Surrey*.

[On numerous occasions, and even so far back as 1883, the fact that *Eucalyptus Gunnii* is one of the hardiest of Gum trees, has been pointed out in these columns. Mr. W. J. Bean, in *Trees and Shrubs Hardy in the*



FIG. 94.—EUCALYPTUS GUNNII AT CHAMPIONS, LIMPSFIELD.

British Isles, refers to a specimen of *E. Gunnii*, 40 feet high, growing near the Pagoda, at Kew, which was planted there in 1896, and appears to be quite hardy—the only one of which so much can be said. We have seen the fine specimen (probably the finest in the country) of *E. Gunnii* in Mr. A. J. Balfour's garden at Whittingham, which ripened seed and was the parent of the Kew specimen (see also p. 205).—Eds.]

SORBUS GLOMERULATA.

A worthy companion to the handsome (*Pyrus*) *munda* var. *subrachnoidea*, which is illustrated on p. 153. Fig. 66, is *Sorbus glomerata*, Koehne, which has just fruited at Kew, for in this case also the fruits are of a dazzling pearly whiteness, and are borne in large corymbs recalling those of the Mountain Ash in general character.

The plant has been at Kew for some time with Wilson's number 1191, and this year it has flowered and fruited, enabling it to be determined. It is a Chinese species, and was described a few years ago by Koehne (*Sarg. Pl. Wils.*, i., p. 470) as a native of woodlands at Changyang Hsien, at 1,600 to 2,300 metres elevation, being based on Wilson, n. 3001.

The author remarked that only immature fruit was known, so that the colour could not be described. It belongs to the same group as *Sorbus munda*, but differs in having rather longer and more acute leaflets, which are serrulate only near the apex, while in *S. munda* the serration continues nearly to the base. The persistent styles are also much shorter in *S. glomerata*, though the fruits are similar in colour and other respects.

It may be added that in this case also the fruits are as palatable to birds as are those of the common Rowan, for no sooner had a branch been taken for comparison than they cleared off the remaining fruits.

It is interesting to find that another handsome white-fruited Mountain Ash is in cultivation. With respect to *S. munda* it may be added that when Koehne described the species the flowers were unknown, and as they are still unrepresented at Kew it would be interesting if the Hon. Vicary Gibbs would, next year, spare a flowering specimen for preservation. R. A. Rolfe.

RARE CONIFERS IN BRITISH COLUMBIA.

NEVER before have I seen so many or such healthy trees of *Sciadopitys verticillata*, the Umbrella Pine of Japan, in and around Vancouver. Whether in private gardens, the grounds of public buildings, or even as a pot or tub plant throughout the city it is widely distributed. It makes an ideal pot plant, being of neat, compact habit and well furnished with its double whorls of leathery leaves, which are of a very desirable rich sea-green colour. Evidently many of these Pines were planted about twenty years ago, when some of the main streets were laid out, as the majority of the trees range from twelve feet to twenty feet in height and are bushy and well developed in proportion.

Near the Chinese quarter of the city I saw some good plants used for house decoration, and in one of the main streets several are very successfully cultivated as tub specimens for outside decoration of the hotels and clubs.

As is well known the Umbrella Pine is somewhat rare in England and slow of development, but in Vancouver the average upward growth is a foot each year, while the thickly produced foliage is robust and healthy.

Two other Conifers that I noted as doing unusually well are *Cupressus Goviniana* and *C. lusitanica*, both being particularly happy in their moist, maritime surroundings. They are the most distinct and graceful members of the family to which they belong. *Thuja orientalis pendula* (T. *pendula* of gardens) also thrives well and is much used in garden ornamentation on account of the drooping branchlets and neat foliage.

The Irish Juniper (*Juniperus communis hibernica*) also attracts notice on account of the strict habit and unusually large size to which it has attained, well furnished specimens fully 20 feet high being occasionally met with. This is a distinctly beautiful variety of decidedly columnar habit, with deep green foliage intermixed with a silvery-glaucous tint. There are also some healthy young trees of *Ginkgo biloba*, the Maidenhair Tree, but none that I have seen so far approaches in height some of those in the Old Country. Many other introduced Conifers are successfully cultivated in Vancouver, the quality of soil, excessive rainfall, temperature and seaside situation being peculiarly suitable for their growth and perfect development. A. D. Webster.

RHODOTYPUS KERRIOIDES.

This slender, Japanese, deciduous shrub is well worthy of a place in a collection of hardy-flowering shrubs. In windy districts it requires the protection of a south or south-west wall, but in warmer localities it makes a handsome bush in the open and as such shows to better advantage when three or more are planted together at a distance of about 4 feet apart. When grown in the foreground of shrubberies the white flowers, which appear in May, are conspicuous objects. S. L.

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WHITE MICHAELMAS DAISIES.

NO one really interested in Asters will suggest that I am wide of the mark when I make the bold assertion that there is not yet a really first-class white Michaelmas Daisy.

There are many good ones, but the day has yet to dawn that will herald the arrival of one that will take its place in the front rank of its fellows and be regarded as ideal. To attain the ideal, raisers will have to find the following qualities grouped together:—The plant must be of strong constitution, free-flowering, possess a pleasing habit, and, above all, have a really good golden eye. Preferably the flower should be single, but even a good semi double white variety would no doubt prove almost as good a market flower as a single, and there is a fine chance for the raiser who accomplishes either or both of these ideals.

There are good white Asters, and for those interested in this glorious race of autumn flowers I refer below to a few of them. If I were asked to name what I considered the best of this group, rather paradoxically I should select one that really is not pure white, but worthy in all ways of inclusion amongst the white sorts. The variety I have in mind is named Sam Banham, which may be described as almost white, having an infinitesimal shade of pink in the younger flowers. It is a fine plant, 6 ft. in height, and excellent in constitution and habit.

Perry's White (see Fig. 95) and Snowball (see Fig. 96), two newly raised sorts, are exceedingly fine, but I am wishful of seeing them tried before venturing further comment on them. The illustrations accompanying these notes will convey a good idea of the beauty of these two varieties.

Next on the list I would class Avalanche, a lovely seedling from Climax, which, though a little late in opening, is one of the best whites for inclusion in any collection. The plant is nearly 6 ft. in height when well grown, and quite distinct. White Climax is another good white sort of the same parentage, but, in my opinion, it falls just short of Avalanche.

Wells's White, a fairly recent introduction, though a good Aster, and one that I certainly would not disparage, does not appeal to me as perhaps it should. One of its merits is that it is a fairly early flowering variety, and it should be grown for this quality. A lovely variety that should be grown extensively, though not pure white, is Blushing Bride; it is of good habit and constitution, free-flowering, 5 ft. in height, and the whiteness of the petals, faintly tinged with pink, is very beautiful.

Amongst the smaller-flowered white sorts of fine and dainty habit are the two members of the ericoides section—Desire, 3 ft. in height, and Perfection, 4 ft. tall. With these should be included one of the *A. diffusus horizontalis* group—i.e., the pretty Bianca, which reaches a height of 3 ft. 6 in., and, as its group name suggests, has a horizontal habit of growth.

Two species of Aster must not be overlooked where good white kinds are desired, and these are *A. turbinellus albus*, with charming open habit and shoots 4 ft. high, and the rather dwarf *A. acris albus*, about 1 ft. high, a most effective little plant, which, like the type, is very early-flowering. E. Beckett, F.M.H., Aldenham Gardens, Elstree.

between some, though different crosses, the time of flowering is not the same, and thus we have the equivalent of the spring and summer flowering L.C. callistoglossa, L.C. Canhamiana and others of this class available in late autumn and winter.

NEW CYPRIPEDIUMS.

From the gardens of Clive Cookson, Esq., Nether Warden, Hexham-on-Tyne, Mr. W. J. Stables (his gardener) sends two very fine Cypripediums of the *C. Maudiae* class, and in which the albinism, or colour suppression, of the parents is carried on. The cross was made in the famous Oakwood collection:—

CYPRIPEDIUM EMERALD.

This beautiful hybrid is the result of crossing *C. Curtisii* Sanderae and *C. Maudiae*. The



FIG. 95.—PERENNIAL ASTER PERRY'S WHITE,
(R.H.S. Award of Merit, Sept. 24, 1920.)

ORCHID NOTES AND GLEANINGS.**LAELIO-CATTLEYA DOLORES.**

A TWO-FLOWERED inflorescence of this new hybrid, raised at Blenheim, between L.C. albanensis (*C. Warneri* × *L. grandis*) and *Cattleya Mantinii* (*Bowringiana* × *Dowiana*), is sent by Mr. J. T. Barker, the Duke of Marlborough's very successful Orchid grower. The flowers are of the *C. Mantinii* class but with larger and broader sepals, petals and lip, which are lighter in colour than those of *C. Mantinii*. The colour is bright purplish rose, with a deeper tinge of purple on the lip, which has an effective arrangement of pale yellow lines from the base to the centre.

There are considerably more than 1,000 *Laelio-Cattleyas* already recorded, and, although there is a certain amount of resemblance

dorsal sepal is two and a half inches across, pure white, with numerous emerald-green lines ascending from the base. The petals are ligulate, decurved, three inches long by nearly an inch broad, white, tinged with green on the lower half and veined with emerald-green, the tips being white. The showy lip, shaped like that of *C. Curtisii*, is larger than in most of the class, and darker green.

CYPRIPEDIUM WARDEN.

This showy Cypripedium, raised from *C. Holdenii* (*callosum* Sanderae × *Maudiae*) and *C. Maudiae* (*callosum* Sanderae × *Lawrenceanum*), naturally resembles *C. Maudiae*, but the combination has resulted in a larger flower, with more of *C. callosum* Sanderae in the lip. The dorsal sepal is pure white, with green lines, similar markings being on the petals. The lip is bright green.

OCTOBER FLOWERS IN A READING GARDEN.

THERE is something very wrong with the seasons this year. A Snowdrop which hitherto has flowered towards the middle of October this year began to bloom early in September, and its seeds are ripening fast. On the contrary, *Zauschneria californica splendens*, generally a blaze of colour in August and September, is only just beginning to bloom in early October. *Viburnum Tinus* is as white now as it usually is in open weather between November and April, *Vinca difformis* is at its best, and *Helleborus niger altissimus* has flower stalks six inches long.

The late Rev. C. Wolley Dod considered there was only one autumn-flowering *Cyclamen*, viz. *C. neapolitanum*; if this be true, it is astonishing what diversity of foliage appears among them. They are the most delightful of plants, flourishing everywhere except in blazing sun, flowering and seeding profusely, and apparently indifferent to the vagaries of our climate. *Crocus speciosus* is almost over, but *C. pulchellus*, *C. medius*, and *C. hadriaticus* are out in perfection; I wonder whether any of your readers will confirm my statement that the last is very sweetly scented. Here they seed freely, and always look best where they come up self-sown. The best patch of *C. pulchellus* is in a gravel path, under the shade of nut bushes.

A feature that arrests one's attention while strolling round the garden in early October is the scent of *Abelia chinensis*. *Cotoneaster horizontalis*, covering a space of 1 ft. by 6 ft., and a sheet of scarlet, will continue in beauty for many weeks. There are glistening seed vessels of *Clematis orientalis* (or it may be *C. tangutica*); vivid red leaves of *Vitis Henryana*, picked out with silvery white and pink along the midrib; the scarlet berries of *Celastrus articulatus*; the rosy pink fruit and scarlet seeds of *Magnolia salicifolia*, a treasure from Mount Usher; the scarlet cones, four inches long, of *Magnolia tripetala*; the almost black flowers of *M. Soulangiana nigra*, now flowering abundantly for the second time; the creamy white cups of *M. grandiflora*, towering above the cottage roof; three glorious vines, which take possession of all the shrubs within their reach, using them as frames on which to display their own beauty—these are some of the charms with which autumn compensates us for our losses.

Besides these there is *Eukianthus campanulatus*, no less charming in autumn, with its leaves of dark green shaded with russet brown, than when in flower. *Tropaeolum tuberosum* has a desire to add further tints, but will have to be checked or I shall have a repetition of the havoc wrought on *Rhododendrons* and *Magnolia stellata* by its beautiful cousin *T. speciosum*, now gleaming with its turquoise berries. Next to it stands *Rhododendron racemosum*, with its crimson stems contrasting well with the colour of the underside of the leaf. Close by is *Palurus australis*, rather pretty when the flexible shoots are wreathed with its small, greenish-yellow flowers—it has not produced its curious fruit here; it has also a legendary interest which alone would make it well worth growing. *Eucalyptus Gunnii*, planted in 1893, is now some 30 feet high. It flowers profusely at this time of the year, and though the flowers are small individually, in the mass, swayed by the wind, they are very pleasing. *Polygonum vacinifolium* is throwing a lovely pink screen over a very ugly piece of wood-work. *Parrotia persica* is just beginning to reveal its colouring, which I should have said was unrivalled had I not seen *Nyssa sylvatica* at Kew.

Of the plants which are still flowering profusely the best are *Cherianthus limifolius*, *Linaria alpina* in many shades, *Papaver alpinum* (white and pink), *Erodium macradenum*, *E. chrysanthum* (which should be grown if only for its silvery foliage), *Salvia Grahami*, *Romneya Coulteri* × *R. trichocalyx*, *Malvastrum lateritium* (brick red and yellow), *Oxalis*

lobata (pure gold), *O. hirta* (pale violet to deep red, only hardy in such climates as that of the Isle of White, whence it came to me from Miss Lwbank's famous garden), *Geranium Wallichianum* (in many shades, but by far the best is that for which we owe our thanks to Mr. E. A. Buxton, with flowers of blue and white), *Geranium Endressii* (soft rose), *Ceratostigma plumbaginoides* (by changing the name from *Plumbago lauripendae* an interesting piece of history has been lost), and the new-comer, *C. Willmottianum* (four feet high and six feet across—a glorious sight).

Parochetus communis, with a Clover-like leaf and deep blue flowers creeps along moist ground. In North Wales it is hardy provided that its root has found shelter beneath a big stone. There are *Colchicums* in many shades, but I cannot name them. *Cuphea ignea* has

Blossoms are still to be found on *Potentilla Detommassii* (bright yellow), *P. nepalensis* var. *Willmottiae*, *Campanula longistyla*, *Calceolaria alba*, *Helianthemum halimifolium*, *Oenothera nocturna*, *Hypericum reptans*, *Cistus Loretii*, *Solanum Torreyi*, *Nerine Bowdeni* (in full flower), *Gerbera Jamesoni*, *Sternbergia lutea* var. *angustifolia*, *Capparis spinosa* (in two places), *Pentstemon cordifolius* (on a south wall), *Primula capitata* (violet), *P. Gagnepainii* (plum colour), *Chelidonium Franchetianum* (yellow), *Potentilla alba* (a much under-rated plant), and *Dianthus Knappii* (yellow).

For the beauty of their foliage these deserve a word of praise: *Potentilla Tonguei*, *Sedum ternatum*, *Corydalis ophiocarpa*, *Apera arundinacea*, *Veronica glauca* and *Saxifraga peltata*. A. C. Bartholomew, Reading.



FIG. 96.—PERENNIAL ASTER SNOWBALL. (SEE P. 204.)

been in flower for three months and is a gem, from Myddelton House, for the foot of a south wall. *Silene regia*, from U.S.A., is brilliant scarlet; the stems are three feet high, but I fear it flowers too late to ripen its seeds.

And now I come to two plants before which one is dumb in admiration—*Gentiana Farreri* and *G. sino-ornata*; there were only two flowers on the former and a slug had one—on the latter there are 21 blooms. I envy Mr. Farrer the moment when he first saw masses of his *Gentiana* three feet across, and cannot express my gratitude for the gift he has conferred on English gardens. *G. Kurroo*, a present from Mr. Hyatt Baker, and *G. Veitchiorum* are but little inferior, but they have been over for a fortnight.

THE ALPINE GARDEN.

MESEMBRYANTHEMUM CRASSULINUM.

In a recent issue Mr. S. Arnott drew attention to *Mesembryanthemum uncinatum* as the only usually hardy species, but with the drawback that it does not flower. Another equally hardy species, however, has come to light, and it has the advantage of flowering very freely. To this belongs the very apt name, *M. crassulinum*. It is a charming plant, freely spreading and only a few inches high, bearing starry, white flowers in profusion. It was given to the Botanic Garden at Cambridge several years ago by Mr. F. J. H. Jenkinson, the University librarian. H. Urwin Lynch, V.M.H.

TOMATOS OUT OF DOORS.

FOR several years I have made a special study of the cultivation of Tomatos out of doors. During the season now ending—by no means one of the best for the ripening of Tomato fruits—I have had an enormous crop. I am more than satisfied, for whilst I have had excellent crops in other years (see Fig. 97), this season I have had an abundance of fruit. I have been in the habit of planting twelve plants, and these have usually produced enough fruit to supply my household and some to give away; but this year there has been such a large harvest that I have sold a quantity in order to get rid of them, and still an average out-door crop remains to ripen.

It may be of interest to your readers to know how such a heavy crop has been produced. For ten years I have grown Tomatos on the same site—a south aspect, against boards. I dig a large trench and place in it fresh soil each year. A quantity of stable manure is also added. This work is usually done in November or December, and the ground left rough until the following spring. I buy my plants early and plant them out in the prepared soil. This year I was too early and so lost my first trusses of fruit. This set-back made me study my plants carefully. They had been checked by the cold and, as the blooms would not set, I used a pencil brush to spread the pollen, but, alas! with no result. I then gave the plants a little nitrate of soda at the roots, and it was a delight to see them respond thereto. A little later I gave them a dressing of lime to set loose the potash in the soil. This answered well. When I got the plants into full growing strength I stamped the soil about the roots and gave them soot once a week, with burnt refuse from the garden, and an occasional dressing of lime.

Subsequently, I supplied the roots with liquid manure twice a week, and paid no heed to the old idea that neither liquid manure nor top-dressing of artificial manure should be given until the fruit have set. My opinion is that the plants require nourishment throughout their career. Twice during the season I scattered a little salt about the roots, prior to watering. When the plants were in full growth I supplied a small quantity of potash and phosphates weekly, giving a dessertspoonful of the mixture to each plant.

Twice during the season I rammed the soil about the roots of the plants. I am of opinion that if a little trouble is taken Tomatos may be grown, in a south aspect, as well out-doors as indoors, but, of course, indoor culture will give the earliest crop. I submit that from the photograph sent (see Fig. 98) it will be shown that even during a fair from satisfactory season like the present, my plants and crops are equal to the average of those grown in a greenhouse. *W. H. Berry, Ipswich.*

ON POTATOS.

THIS has been a splendid Potato season. We have had large crops and no disease; overgrown tubers and the few of a size fit for seed being the only causes for disappointment. Very few plants of Golden Wonder showed second growth about the third week in September, and as the skin of the tubers was then set, the crop was lifted before it suffered damage.

I should be inclined to say of the novelties that I have tried that they are more suited to the farm than the garden, the haulm being strong and tall and the tubers in consequence much too large for ordinary use. Majestic in this respect exceeds all others here, and, after a trial of two years, will not be grown again. In the case of Golden Wonder, which farmers say produces too few large tubers, the conditions of garden culture eminently suit it, and, as a rule, the tubers are just the right size. The Ally has also been disappointing, more as

regards flavour than cropping, and probably this variety also will be dropped in the future. The Gold Medal Arran Comrade produced a very large crop of handsome tubers. The flesh is soft and flonry to a degree, too soft indeed, for my taste, but it will meet the requirements in that respect of most people, and, like Potatos in general, it has to be carefully cooked to get the best out of it.

A variety I had sent me named Bloomfield is one of the best of the season. It is a second-early sort and also soft fleshed. I am fond of a hard-fleshed Potato and for a series of varieties of this type I have found none better than Eclipse, which is at once very early and remains

Since penning the above a report of the farm crops has come to hand, and the results are similar to what I have stated as obtaining in the garden. The tubers are large, with few small ones, and in Forfar the yield is stated to be 15 tons to the acre, whilst in East Lothian it is 16 tons. No doubt these abnormal yields in these two Potato-growing counties is largely due to the new varieties that are so much grown, but also, in addition, to the fecundity of these, there is the large size that the bulk of the tubers attain. Here and there disease is appearing, but thus late in the year it can make no headway, and it will be disposed of in the first night's frost. *R. P. Brotherston, Tynninghame Gardens, Prestonkirk.*

POTATO TRIALS AT EDINBURGH.

A LARGE number of Potato experts were invited by Messrs. Dobbie and Co. to witness the lifting of their Potato trials on October 7. All the varieties tested were immune from Wart Disease. The field selected for the trials was in a very high state of cultivation, consisting of light loam, which has been enriched for many years with annual dressings of animal manure at about thirty tons to the acre.

The Potatos were planted 3 ft. from row to row, and 18 in. from set to set, therefore, they were grown under the best possible conditions. The first twenty consecutive roots of each variety were lifted. The tubers were beautifully clean, without a sign of disease; as a matter of fact *Phytophthora infestans* had not put in an appearance, no doubt owing to the altitude and the wind-swept position. I saw only one small spot of brown scab during the lifting process, and I should say there was no difficulty in selecting a dish of exhibition tubers from every root lifted. I did not take particulars of every variety, but noted the leading sorts. *Kerr's Pink*, the well-known coloured round, yielded the heaviest crop with a total of 1 cwt. of tubers from the twenty roots, which works out at 24 tons 4 cwt. to the acre; a little closer planting would give a heavier yield. The bulk of the tubers were large and shapely. *Majestic* totalled 103 lbs., and would have been higher but for two weak roots. The *Ally* gave a total of 104 lbs. of splendid tubers.

Roderick Dhu, the new variety, yielded 100 lb.; it is a flattish-round tuber, and has all the appearance of making a fine market Potato. I believe its price was about £60 per ton in the first case, then it rose to £100 per ton, while the present market price is £200 per ton—and this is the wholesale price! Everyone agreed it was a handsome variety. *K. of K.* gave 82 lb.; the shaws are numerous "grassy" was the term applied, though the tubers were not small as one would expect from the growth. *Immune Ashleaf* yielded 99 lb., and it struck me as being one of the most useful varieties in the trials; it is early and has a good constitution, while nearly all the tubers were of ware size. This is not a new variety by any means, and is of Continental origin. It has simply been rediscovered by virtue of its immune character.

Nithsdale, a fine white kidney, returned 88 lb. *Tinwald Perfection* was a very popular variety with the experts, and it gave 87 lb. of good, shapely tubers. *Great Scot*, now well known, yielded 90 lb., while *Resistant Snowdrop* gave 76 lb. *Lochar I* did not see weighed in the bulk, though one root yielded 8 lb. of good, sound ware.

Strange to say, nobody seemed anxious to see any of the coloured varieties weighed, which somewhat surprised me for *King Edward VII.* is surely a popular market Potato, in spite of its colour. Other coloured varieties represented were *Climax*, *Edzell Blue*, *Mauve Queen* and *Arran Comrade*. Several seedlings, under number, were lifted, and although they are the result of a cross between *Majestic* and *Edzell Blue*, not one of the latter colour appeared amongst them, all being either white or pink. Some of them yielded splendidly, and no doubt we shall hear of them again. *J. B. R.*



FIG. 97.—A HEAVILY-CROPPED OUTDOOR TOMATO IN 1919.

in good condition till autumn. For a late variety *Golden Wonder* has never been surpassed, and for an earlier sort to come between this, but which is also good all through the winter, the recently introduced *Pathfinder* is first rate. The last-named is very prolific; many plants have produced 30 to 38 tubers each this year. It requires very generous treatment, but as the haulm is short compared to many others it may be planted much closer.

One need not recapitulate cultural methods, but it may be noted that planting at least six inches in depth has again proved superior to shallow planting, and not alone in the securing of an increased yield, but also in a healthy and vigorous plant. Some were planted by mistake somewhat less deeply and were altogether inferior to those treated as above.

FRUIT REGISTER.

PEACH SALWEY.

MR. GEORGE BROWN, The Gardens, Brownsea Island, Poole, sends a fruit of Salwey Peach weighing just over 16 ounces. On a previous occasion (see *Gard. Chron.*, October 7, 1911, p. 262) Mr. Brown sent an even larger specimen which, when gathered, weighed 18½ ounces, although it had lost ¾ ounce when it reached us. Although these are both exceptional heavy weights for a Peach they are excelled by a fruit of Dr. Hogg variety, grown by Mr. Goodwin of Maidstone in 1880, which weighed 23¾ ounces.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from p. 194.)

ENGLAND, S.W.

CORNWALL.—Apples are under the average, although not much so. Pears are hopelessly under; the promise was never better, and there was a splendid set, but owing to a series of gales in May the fruit was brought to the ground. The wind came strong and bitterly cold from S.S.E. Gooseberries were very numerous; Raspberries and all Currants were average crops, but Strawberries were light, mostly on account of what is locally known as "red plant." Fruit pests which usually attack leaves are absent. All fruit trees were winter sprayed. The soil is a good, deep loam on green stone.—*Harry Williams, Tolvren, Redruth.*

DEVONSHIRE.—The Apple crop is practically a failure, with the exception of the variety Lord Grosvenor, which I have never known to miss bearing a full crop during the past 14 years. There was a fair show of blossom, but cold, easterly winds prevailed during most of that period; this, coupled with a lack of cleansing attention (owing to the general shortage of labour), has certainly had a disastrous effect on the crop. Small fruits, especially Raspberries and Red Currants, have been plentiful and good, and the same is true of Strawberries. The soil is a medium loam overlaying the red sandstone; the situation is on a slope, facing south, and in dry summers the ground suffers from drought.—*T. H. Bolton, Powderham Castle Gardens.*

—Apple, Pear, Plum and Peach trees all bloomed freely, but only Pears set fairly well, and the fruits subsequently dropped. Apples, Plums and Peaches are almost failures. Gooseberries and Black Currants were good average yields, with Strawberries not quite so well. Raspberries and Red and White Currants were very bad, owing to a severe storm from the west and south-west, in the middle of May. The soil is gravelly.—*Gilbert Sleep, Hartland Abbey, Hartland, S.O.*

—These gardens are situated very close to the sea coast, and are much exposed to the east winds (consequently being called East-cliffe). We suffered very badly from a severe hailstorm on April 5, followed more or less by heavy winds, especially on April 15, when a heavy gale prevailed, doing much damage to the fruit buds, etc. In more sheltered positions inland the damage was not so bad.—*Wm. Lock, Eastcliffe Gardens, Teignmouth.*

GLoucestershire.—Owing to mild weather at the commencement of the year, fruit trees out of doors blossomed quite three weeks earlier than their normal time. There was a fine show of bloom and apparently a considerable number of fruits, but cold weather prevailed at the end of April, and frosts occurred in the first week of May, consequently the greater portion of the young fruits perished. Orchards were never known to be so bare of Apples, and the few fruits that the trees bore got chilled by hailstorms in June, and have since fallen off the trees. The same is true of Pears, both in orchards and enclosed gardens. We had a few Plums, but

Apricots were a failure, a greater portion of the trees dying back. Peaches and Nectarines were moderate crops, and the leaves were badly blistered. Morello Cherries were a failure; I have not known them fail for many years. Bush fruits were half average crops. Strawberries were an average number, but many of the berries were spoiled by wet when ripening. Raspberries were a light crop; the blossom was destroyed by frost. Taken altogether, it is a most disappointing fruit year.—*Arthur Chapman, Westonbirt Gardens, Tetbury.*

—Apples are very scarce both in these gardens and in the neighbourhood generally. Pears are nearly as bad. Cherries, even Morellos, notwithstanding that the trees bloomed well, were an absolute failure. I have never



FIG. 98.—A HEAVILY-CROPPED OUTDOOR TOMATO IN 1920. (See p. 206.)

known Morellos fail to crop before. Of Strawberries I had an excellent crop, but many of the berries were spoilt by continued wet weather. The weather was wet whilst Pears and Cherries were in bloom. I had a fine crop of Loganberries. Gooseberries also were very good, but Black and Red Currants were not so numerous as usual.—*John Banting, Tookworth Gardens, Fulfield.*

—The fruit crops in the county are, on the whole, considerably below the average. There are practically no Pears, but in a number of orchards there is a fair sprinkling of Apples, particularly on trees which did not bear last year. The best cropped Plums were Pershore, Blaisdon Red and Monarch, and in isolated cases there were fair crops of Early Prolific.

Fruit blossom developed early and was fairly plentiful, but it only lasted a short time and never looked promising. Both Apples and Plums suffered severely through attacks of aphids, and the Apple crop was reduced very considerably through the ravages of the Apple blossom weevil. Gooseberries, Currants and Strawberries were all satisfactory.—*G. H. Hollingworth, Shire Hall, Gloucester.*
(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Hard, Over-ripe Seed Potatoes (see pp. 112, 119).—I think that even now some misconception exists with your correspondents as to the real cause of failure with some Potato seed. Mr. Barrett's procedure is invariably adopted in most gardens, with the same success. I can vouch for those in frames at Coombe Cottage being generally all that could be desired both in appearance and cropping. I believe the drying process mentioned by Mr. Stokes is often the cause of failure, if carried too far or accidentally caused by being placed too near heating apparatus or drying sheds. The skin then gets very hard and corrugated, and this often happens without the least suggestion of greening. I find with early Potatoes on a warm border the last set fails invariably (when dry), and when dug is to all appearance as when planted, only harder and rougher. I once experimented with a hundredweight of hard-looking Potatoes by spreading them singly on the border inside a vinery, which had been started, consequently there was plenty of moisture. They soon altered in appearance and commenced to grow, when they were hardened off, planted and produced a good crop. *W. J. Murphy, Inwood, Templecombe.*

Erigeron mucronatus (see p. 183).—I wish I could endorse Mr. Irwin Lynch's commendation of this plant, for it is lavish in the production of blossom from May until December; but when he says "it never becomes a weed," I can only envy him his experience. On a dry wall, yes; no doubt that is the place for it, as may be seen on the walls at Cintra, near Lisbon. I was so misguided as to plant a single tuft of it on a retaining wall devoted to the growth of choice alpines, and *Priapus*, god of gardens, alone knows how many treasures it has overrun and throttled. It is impossible to keep it in check; the only way to get rid of it would be to pull the wall down; for it scatters its seeds far and wide, and before one can recognise the seedlings they have sent wiry roots far among the stones. *Herbert Maxwell, Monreith.*

Autumn Flowers.—I venture to add a few more names of autumn flowers to the somewhat lean list given by *Yorkshire Gardener* in his otherwise practical notes on page 127? The *Shasta Daisy*, *Chrysanthemum maximum*, is at its best, and near it are clumps of late-flowering *Golden Rod*, *Solidago altissima neglecta*. *Verbena venosa*, one of the best flowering plants in cultivation, is still one of the most noticeable occupants of the plant border. It has been a sheet of bloom for weeks past. *Salvia patens*, with its wonderful blue flowers continues to make a bright display. Two or three of the *Cone flowers*—*Rudbeckias*—bloom well into October and are handsome. Several of the *Sneezeworts*—*Heleniums*—also flower late in autumn and cannot be omitted where late flowers are prized. *Lobelia syphilitica*, none too often seen, is capital for a late display of rather bluish-purple flowers, borne on stiff stems. *Sedum spectabile* with its pink heads of bloom is well known, but there are many gardens from which this good old border subject is absent. Then there is the *Winter Cherry*, *Physalis Franchetii*, with its orange, bladder-like calyces, creating splashes of brilliance among the fading glories to be seen on every hand. *C. T., Amphill Park Gardens.*

SOCIETIES.

ROYAL HORTICULTURAL.

OCTOBER 19.—Space was curtailed somewhat at the Royal Horticultural Hall on this date, as one end of the hall was occupied by the stage on which a representation of the story of the "Mayflower" is being given over a period of about a fortnight. Exhibits were numerous and some were of exceptional interest. Chrysanthemums and Michaelmas Daisies were prominent among the various flowers displayed. Orchids were unusually good for the time of year, while Potatoes were well represented. There was a capital attendance throughout the day, and Dr. Rendle's discourse on the more interesting plants exhibited was listened to by a goodly number of Fellows.

Floral Committee.

Present: Messrs. H. B. May (in the chair), Sydney Morris, G. Renthe, John Heal, Wm. H. Morter, Chas. Dixon, Arthur Turner, H. J. Jones, Chas. E. Pearson, W. P. Thomson, E. H. Jenkins, J. T. Bennett-Poë, George Paul, E. A. Bowles, Reginald Cory, W. J. Bean, R. C. Notcutt, J. W. Barr, James Hudson, C. R. Fielder, Thos. Stevenson, J. W. Blakey, Andrew Ireland, H. R. Darlington, H. Cowley and W. B. Cranfield.

AWARDS OF MERIT.

Chrysanthemum Mrs. George Monro.—A glorious, large-flowered Japanese variety of charming form and gorgeous colour. The broad florets curl slightly and droop, forming a graceful outline; the colour is rich and vivid velvety-crimson, with buff reverse. Shown by Mr. NORMAN DAVIS, Framfield.

Chrysanthemum Majestic.—A huge Japanese variety of full exhibition size; it has broad florets that incurve a little at the tips; colour golden amber. Shown by Mr. N. DAVIS.

Chrysanthemum Sorcerer.—This medium-sized, light chestnut-bronze, Japanese variety is fully described in our report of the N.C.S. meeting on p. 210.

Messrs. Barr and Sons exhibited *Nicandra physaloides*, which has mauve, white centred, bell-shaped flowers, which are followed by enlarged calyx segments that curve over the rounded, greenish fruits.

GROUPS.

Chrysanthemums were shown in great variety by several growers. Mr. H. J. JONES had a most attractive row of the useful white-flowered *Blanche Poitevine* as exceptionally dwarf pot plants, and he also made a good show with such large exhibition Japanese sorts as *Majestic* and *Viscount Chinda*, as well as a good selection of the smaller varieties (Silver Grenfell Medal). Mr. NORMAN DAVIS gave special prominence to some excellent blooms of large Japanese varieties, notably *Mrs. George Monro*, junr., *Majestic*, *Wm. Turner* and *Mrs. Algernon Davis*, and he also exhibited an admirable selection of the smaller sorts (Silver Grenfell Medal).

Mr. KEITH LUXFORD made a most attractive display, chiefly with the smaller, decorative varieties. Such sorts as *Midnight Sun*, *Shrapnel*, *Red Anemone*, *Cranford Pink* and *Pink Delight* were very charming (Silver Banksian Medal). Messrs. W. WELLS and CO. made a great feature of *Blanche de Poiten*, their new dwarf white, which is a splendid acquisition. Mrs. Greening, a small-flowered, Japanese sort of deep rosy-mauve colouring, found many admirers (Silver Banksian Medal).

Carnations also were very good and show promise that during the season now starting the quality will be high. Messrs. ALLWOOD BROS. filled a large table space with sprays of *Dianthus Allwoodii* in many colours and all most desirable. On the opposite side of the central gangway they displayed excellent blooms of perpetual-flowering varieties (Silver Grenfell Medal). In the exhibit of Messrs. STUART LOW and CO. their new *White Pearl*, even finer than when it received the Award of Merit, was very prominent. The crimson *Brilliant* and *Rose Doré* were also much admired (Silver Grenfell Medal).

A splendid collection of winter-flowering Begonias in pots was shown by C. A. CAIN, Esq., The Node, Welwyn (gr. Mr. T. Pateman). That indispensable variety *Optima* predominated, and we question if it has ever before been seen in such magnificence. The crimson *Ideal* was also excellent (Silver-Gilt Flora Medal). Such attractive and uncommon stove plants as *Nidularium* and *Billbergias*, with *Alocacias* and *Nepenthes* were contributed by Messrs. L. R. RUSSELL, LTD., who, in an opposite group, had hardy shrubs, which included a fine *Loquat*, *Erya latifolia* variegata, *Ivies*, *Myrtles*, *Clematis* and *Elaeagnus macrocarpa* (Silver Flora Medal).

Mr. G. LILLEY sent from the Channel Islands an attractive collection of *Nerines* (Silver Banksian Medal), and Messrs. H. CHAPMAN, LTD., showed a selection of seedling *Nerines*.

Roses were a bright feature of the show, and the group from Mr. E. J. HICKS was particularly successful. His new cluster variety, *Glory of Hurst*, was particularly fascinating (Silver Grenfell Medal). Roses were also well shown by the Rev. J. H. PEMBERTON, the vase of *Vanity* being especially graceful (Bronze Banksian Medal).

Judging from the various exhibits there are no present signs of the close of the Dahlia season. Messrs. CARTER, PAGE and CO. made a great show of the decorative sorts, and we were particularly pleased with *Sorcerer* and *Christie* in this meritorious exhibit (Silver Grenfell Medal).

Mr. J. B. RIDING had many excellent Cactus varieties, as well as of other types. Of the Cactus sorts, *Elfin*, *Snow Queen* and *Mamie Walton* were excellent in every respect (Silver Flora Medal). Messrs. JOS. CHEAL and SONS showed various Dahlias of merit, but their principal exhibit was of hardy shrubs, intended to illustrate the value of autumn tints and fruits. *Berberis Thunbergii*, several *Cornuses* and *Cotoneaster frigida* were admirable (Silver Flora Medal).

In a corner of the hall, Messrs. J. PIPER and SON made and planted a little garden of the type they show so well at the Chelsea exhibitions (Silver Flora Medal).

Mr. W. WELLS, junr., showed various Michaelmas Daisies, herbaceous Phlox and Heleniums in the best varieties (Silver Banksian Medal). Messrs. CUTBUSH and SONS had a graceful selection of Michaelmas Daisies, chiefly of *Aster ericoides* type (Bronze Banksian Medal), and Messrs. BAKERS, LTD., also showed Michaelmas Daisies, and good blooms of Iceland Poppies (Bronze Banksian Medal).

Fragrant Violets and fruitful autumn Raspberries were shown by Mr. J. KEITTE (Bronze Flora Medal), and Messrs. REAMSBOTTOM and CO. had a good selection of their St. Bridgid Anemones (Bronze Banksian Medal). Mr. ISAAC HORSE had a dainty arrangement of *Scabiosas* and small-flowered Michaelmas Daisies and a vase of the brilliant *Schizostylis coccinea*.

Orchid Committee

Present: Sir Jeremiah Colman, Bart., in the chair. Messrs. Jas. O'Brien (hon. secretary), C. J. Lucas, J. Wilson Potter, R. A. Rolfe, Frederick J. Hanbury, Pantia Ralli, A. McBean, E. R. Ashton, Arthur Dye, S. W. Flory, Chas. H. Curtis, J. E. Shill, F. K. Sander and T. Armstrong.

AWARDS.

FIRST-CLASS CERTIFICATES.

Laelio-Cattleya × *Ivanhoe superba* (C. *Dorica aurea* × L.C. *crimson*), from Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill). One of the finest of the noted *Laelio-Cattleyas* raised at The Dell, the third to be exhibited and by far the best. It is an ideal flower, of large size, with rosy-mauve sepals and petals and broad, ruby-purple lip with many gold lines from the base.

Vanda coerula, *King of the Blues*, from PANTIA RALLI, Esq., Ashted Park (Orchid grower, Mr. Farnes). A grand exhibit, noteworthy not only for the superb development of its deep, true blue flowers, but for the fine condition of the plant producing them. Several

good ordinary varieties were shown for comparison, but the circular, large, deep sky-blue blooms of the new form were markedly superior.

AWARDS OF MERIT.

Sophro-Laelio-Cattleya Camden (*Laelio-Cattleya Oakwood alpha* × *Sophro-Cattleya Doris*), from E. R. ASHTON, Esq., Camden Park, Tunbridge Wells (gr. Mr. Varnum). Probably the finest of the clear yellow *Sophro-Laelio-Cattleyas*, in which the other colours of the parents have been eliminated. The flower is of perfect shape and circular in outline. The sepals and petals are bright orange chrome yellow. The lip is a darker shade with a cherry-red band on the front.

Cypripedium Frontline (*Mirum* × *Leeanum*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). A good addition to the *Leeanum* section and with strong features of that hybrid. The large dorsal sepal is white, with yellowish base, spotted with purple. The rest of the flower is pale yellow, tinged with red-brown.

Cattleya Dolorosa, from W. R. FASEY, Esq. A pretty hybrid of unrecorded parentage with pale yellow flowers having a bright crimson purple lip with thin gold lines from the base.

Cattleya Troilus (*Luegeae* × *Clotho*). A handsome *Cattleya* with finely-developed, light mauve sepals and petals, and showy, crimped, violet-purple lip.

Brasso-Laelio-Cattleya Sofrano (B.C. *Mrs. J. Leemann* × C. *iridescent*), from Messrs. CHARLESWORTH and CO. The best of the distinct batch shown by Messrs. CHARLESWORTH on several occasions. The flowers are clear sulphur-yellow, with a rose shade on the lip.

CULTURAL COMMENDATION.

To OTTO BEIT, Esq., for a fine plant of *Vanda coerula*.

CERTIFICATE OF APPRECIATION.

Recommended for *Brasso-Laelio-Cattleya Citrina*. Shown by PANTIA RALLI, Esq. (Orchid grower, Mr. Farnes). A very singular hybrid showing the decumbent habit of C. *citrina*. The flowers are pale greenish yellow.

GROUPS.

Messrs. ARMSTRONG and BROWN, were awarded a Silver-Gilt Flora Medal for a group of showy hybrids. The plants were chiefly raised at Orchidhurst and included some exceptionally fine *Odontoglossums*, notably the *Orchidhurst* strain of *Promerens Xanthotes*, with its pure white flowers sparsely spotted with yellow; forms of *O. eximium*, the central plant, the *Coronation* variety, having a fine branched spike of pale violet flowers; *O. Mrs. Jas. Wood*, the original of which gained an Award of Merit at the last meeting; a showy lot of *Odontodas*, *Miltonias*, *Cattleyas* and *Laelio-Cattleyas*, with an interesting selection of rare species.

A Silver Flora Medal was awarded to H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), for a very rich group, the central plant of which was *Odontoglossum Lady Veitch*, which had previously received a First-Class Certificate and is one of the best, dark blotched hybrids. Hybrid *Cypripediums* and rare species were also shown.

Messrs. CHARLESWORTH and CO. were awarded a Silver Flora Medal for a good group of *Laelio-Cattleyas* and other hybrids, specially noteworthy being *Cattleya Cerebus* (*intertexta Julietiae* × *labiata alba*), a fine, pure white flower; C. *Troilus* (*Luegeae* × *Clotho*), fine in shape and rich in colour; *Brasso-Laelio-Cattleya Golden Crown* (B.L.C. *Joan* × C. *Venus*), yellow with reddish crimson lip; *Brasso-Cattleya Lilian* (B.C. *Digbyano-Moskiae* Queen Alexandra × C. *chocoensis*), a good cream white flower, and some other fine novelties.

Messrs. STUART LOW and CO. were awarded a Silver Flora Medal for an effective group, rich in *Cattleyas*, *Laelio-Cattleyas* and *Cypripediums*.

A Silver Flora Medal was awarded to Messrs. SANDER for a showy group, in which the white forms of *Cattleya Hardyana*, C. *Fabia*, and other hybrids were fine features.

A similar award was made to Messrs. J. and A. McBEAN for a group of white *Cattleyas*, in-

cluding grand forms of *C. Eleanor*, contrasting finely with their very handsome, dark *Laelio-Cattleya Colmaniana* and other richly coloured *Laelio-Cattleyas*. Tall spikes of their *Cymbidium Doris* in the back.

OTHER EXHIBITS.

R. G. THWAITES, Esq., Streatham, showed the very handsome, new *Odontoglossum autumnalis* (crispum blotched x swietenicolor), a very charming hybrid with fine mahogany-red flowers, with white ground; the pure white *Cattleya Snowdon*; and other hybrids.

Dr. MIGUEL LACROZE, Bryndir, Rochampton (gr. Mr. Taylor), showed *Odontoglossum Moor-gate* (Ianthé x eximum), a richly-spotted flower.

G. W. BIRD, Esq., sent a very pretty form of *Laelio-Cattleya Sargon*, with mauve-tinted flowers.

Baron SCHRÖDER exhibited a choice *Cattleya Hardybil*.

J. J. JOICEY, Esq., The Hill, Witley (gr. Mr. MacKay), showed the new *Brasso-Cattleya Jean* (B.-C. Menda x *C. Dowiana aurea*), white with yellow disc; *C. Abekeniac* and *Laelio-Cattleya Irensis*.

Mrs. BISCHOFFSHEIM, The Warren House, Stanmore, showed *Cattleyas Sibyl Primrose*, one of a batch of thirty—all different.

Fruit and Vegetable Committee.

Present: Messrs. C. G. A. Nix (chairman), J. Cheal, Geo. F. Tinley, S. B. Dicks, P. D. Tuckett, F. Jordan, W. Divers, W. Wilks, Owen Thomas, S. T. Wright, E. A. Bunyard, W. Poupert, G. P. Berry and A. W. Metcalfe.

A Silver-gilt Knightian Medal was awarded to Messrs. SUTTON AND SONS for a collection of Cabbages. This exhibit was very interesting as showing the numerous types of Cabbages, including Coleworts, Red Cabbages, Savoy, etc. The more notable varieties included Improved Winningstadt, Summer Drumhead, Flower of Spring, Tender and True, Early Market, Wheeler's Improved and Main Crop. The best of the Coleworts was Rosette, and Dwarf Green Curled the best Savoy. Dwarf Blood Red and large Blood Red were two of the best Red Cabbages. Messrs. Sutton also exhibited a collection of vegetables raised from seed sown since July 14 last, for which a Silver Banksian Medal was awarded. They were Potatoes, Peas, Turnips, Radishes, Carrots, Lettuces, Beans, and many other kinds.

A large collection of Apples, shown by F. C. Stoop, Esq., West Hall, Byfleet (gr. G. Carpenter) was awarded a Silver-gilt Knightian Medal; the principal sorts were Lady Henniker, Rival, Blenheim Pippin, Chas. Ross, Gloria Mundi, Horned's Pearmain, Fearn's Pippin, Cox's Orange Pippin, Christmas Pearmain and Warner's King.

From the Society's gardens at Wisley were exhibited varieties of second-early Potatoes, grown under trial this season. Some of the tubers were cooked to show their edible qualities. The crop from 20 tubers was given in each case, and the best yield was from *Majestic*, which produced 121½ lb.; other prolific croppers were *Great Scot* (107 lb.), *King George* (105½ lb.), *Ally* (100½ lb.), *Jeannie Deans* (97 lb.), *British Queen* (95 lb.), *Arran Comrade* (95 lb.), *Di Vernon* (88½ lb.), *Braemar Castle* (88 lb.), *Berwick Castle* (87 lb.), *Epicure* (75 lb.), and *K. of K.* (72½ lb.). The Cambridge Plant Breeding Institute exhibited a large number of seedling Potatoes raised by Miss N. S. G. Breeze in 1918-1920. The object of these experiments was to raise new varieties of Potatoes resistant to both blight and wart diseases and at the same time to preserve the high standard of the best commercial varieties in regard to cropping capacity and other necessary qualities. Considerable variation appeared in the first generation out of over 5,000 seedlings raised. From these most stringent selections have been made during the two years they have been in cultivation, and particularly all seedlings suffering from blight and leaf-curl have been discarded. Out of some twenty distinct crosses

made, the members of one particular family, known as "E," proved to be remarkably resistant to both blight disease and leaf-curl. So far this family has been quite immune to leaf-curl, and out of several hundredweights of tubers grown only three have shown traces of the blight disease. Some excellent cropping and quality results also have been obtained from *Golden Wonder* x *Leinster Wonder*, both parents of which are immune to "Wart" and one highly resistant to blight.

FOUR NORTHERN COUNTIES.

THE sixth Fruit show and Congress of the above society took place at Hexham, Northumberland, on the 9th inst. There was an exceedingly fine display of good-quality fruit. The Apple classes in the competitive section were well contested, but those for Pears did not produce the number of exhibits that might have been expected, although the greater number of the fruits were of good quality. Severe frosts and cold weather during May, after the trees were in flower, seriously affected the fruit crops in the north, and only in favourable situations have Pears been plentiful this season. However, the Society is to be congratulated on the show as a whole. No lectures were given and a congress without instruction lectures is not likely to have the desired aim of the founders of the Society—as Lady Carlisle, who opened the exhibition reminded her hearers. The Society was founded to encourage the development of hardy fruit growing in the northern counties, and the matter of lectures should not be overlooked at future exhibitions.

The first class in section A, open to growers in the four northern counties, in which Messrs. W. Voss and Co., Ltd., offered a challenge cup valued £10 10s., was for 12 dishes of Apples, 9 of cooking and 3 of dessert varieties. The 1st prize was won by Mr. Millican, Carlisle. This exhibit stood alone in comparison with the others; both in size and colour the fruits were excellent and included Chas. Ross, James Grieve, Allington Pippin, two dishes of Royal George, two of Bramley's Seedling, Annie Elizabeth, Newton Wonder, Warner's King and the Rev. W. Wilks. 2nd, Messrs. Britton and Sons, Black Mill, Langworthy, who showed fair examples of Chas. Ross, Rival, Worcester Pearmain, Lord Grosvenor, Royal Jubilee, Lord Derby, Bramley's Seedling, Peasgood's Nonsuch, Ecklinville Seedling, Stirling Castle, Potts' Seedling and Newton Wonder.

Section B was open only to gentlemen's gardeners and amateurs, except where the schedule stated otherwise. The Bell challenge cup (restricted to growers in Northumberland) was offered for 6 dishes of dessert Apples, distinct. The 1st prize was won by Mrs. Gibson, Orchard Gap, Hexham (gr. Mr. H. G. Lloyd), with twelve coloured fruits of Cox's Orange Pippin, King of Tomkin's County, Egremont Russet, Chas. Ross, Allington Pippin and Lady Sudelev. 2nd, Mrs. Clayton, The Chesters, Hamshaugh (gr. Mr. Cocker); this was a close competition, the main difference in the two exhibits being the degree of colouring. Mrs. Bambridge's challenge cup for 12 dishes; 4 of cooking Apples; 4 of dessert Apples and 4 of Pears (open only to Northumberland growers) was won by Mrs. Gibson, who showed good fruits of Apples, Peasgood's Nonsuch, The Queen, Warner's King, King of the Pippins, Worcester Pearmain, Cox's Orange Pippin, Chas. Ross, and Pears Durondeau, Marguerite Marillat and Doyenne du Comice. 2nd, Sir James Knott Bt., Close House, Wylam (gr. Mr. H. E. Anderson). The Pears in this exhibit were the best in the show, the dessert Apples fairly good, but cooking varieties on the small side. 3rd, Earl Grey, Trowick, Hull (gr. Mr. Wright), whose cooking Apples were exceptionally fine, but the dessert Apples and Pears of average merit only.

In the classes for 6 dishes of Apples (3 cooking and 3 dessert), the 1st prize was won by Sir F. N. Chance, Carlisle (gr. Mr. Trodgsen), with fine examples of Bramley's Seedling, Ecklinville Seedling, Bramley's Seedling, Wor-

ces'er Pearmain, and James Grieve. 2nd, Lady Raleigh, Beaumont Castle, Hexham (gr. Mr. McLaren). 3rd, Earl Grey.

For 3 dishes of Pears Miss Atkinson, Newbiggin, was 1st, showing Conference, Marie Louise, and Pitmaston Duchess. 2nd, Mrs. Gibson, Woodley Hill.

Sir J. Knott showed the best single dish of Pears, staging Pitmaston Duchess. 2nd, Miss Atkinson.

In the single dish classes for Apples Mr. H. Bill, Hexham (gr. Mr. S. Moor) was first for Warner's King, Lord Derby, Bramley's Seedling, Peasgood's Nonsuch, Rev. W. Wilks and any other variety respectively. Mr. Milley, Hexham, was 1st for Emperor Alexander; Lady Raleigh 1st for Lord Suffield, James Grieve and Worcester Pearmain; Sir James Knott was 1st for Ribston Pippin and Wealthy, while Capt. Keith, Sandhoe, Hexham (gr. Mr. Lamberton) had the best Chas. Ross, Langley Pippin and King of the Pippins.

Mr. Potts, Hexham, excelled in the class for two single dishes of Plums, with good fruit of Victoria and Jefferson. In the single dish class for Plums Sir J. Knott was 1st with Jefferson, and the same exhibitor was awarded the 1st prize for Darmon's Crab. Mr. Hallett, Carlisle, was placed 1st for Peaches with a good dish of Gladstone. 2nd, J. C. Straker, Esq., Slagham House (gr. Mr. Leab), who showed a good dish of Sea Eagle.

The best two bunches of White Grapes were shown by Lady Raleigh, the variety being Muscat of Alexandria; 2nd, Capt. Keith. For two bunches Black Grapes, Mr. J. Hodgkin was 1st with small, but well-fruited bunches of Black Hamburg; 2nd, Lady Raleigh.

TRADE EXHIBITS.

Messrs. Britton, Black Mill, Langworthy, were awarded the cup offered for the best trade exhibit. They showed an extensive collection of Apples, certain sorts being tabulated as the most suitable for the northern counties; various Pears and an extensive exhibit of bottled fruits. Messrs. Mitchie, Alnwick, also had an instructive display, and Messrs. Laxton Bros., Bedford, showed a good collection of well-developed Apples.

RYDER'S POTATO SHOW.

MESSRS. RYDER AND SONS, of St. Albans, are doing a good work by encouraging the raising and cultivation of new varieties of Potatoes. During the past few years they have distributed many thousands of packets of Potato seeds (the result of careful crossing), not only throughout the British Isles, but in nearly every part of the world, and to ensure so far as possible that the most promising seedlings should not be lost sight of valuable prizes have been offered by the firm at their annual show at St. Albans, the result being some interesting exhibitions. This year it was decided that the exhibition should consist of "one root of Potatoes lifted in the presence of a responsible witness, grown either from a single or cut tuber or from a seedling raised in 1920." £50 was offered as a first prize, besides other valuable prizes, nineteen in all, and the result proved to be one of the most interesting exhibitions of its kind.

About four hundred exhibits were received from all parts of the country, and the great variety, both in shape, colour and weight of the crops was surprising and entailed no little difficulty to the judges in making the awards. Many very promising sorts appeared which will no doubt find a place in future lists. The first prize of £50 was awarded to Mr. J. H. Ridgewell, of 180, Histon Road, Cambridge, who exhibited a white-skinned variety, kidney to pebble shaped, of fine appearance, a heavy cropper, without the slightest trace of disease; quality first rate when cooked, weight 11½ lb. for the root; apparently a midseason variety. The second prize of £20 was awarded to Mr. W. Kingston, of 19, Albert Terrace, Worcester, whose seedling is certainly one of the most handsome ever placed before the public. This is

also a white-skinned variety, pebble shaped, with very shallow eyes, and it should rank among our best exhibition varieties. From the one root exhibited at least twelve tubers were fit for any exhibition. This exhibit was a very close second, but the produce was not so heavy by four and a quarter pounds as the premier set. The third prize of £10 was won by Mr. C. Pakworth, Lidwells Cottage, Goudhurst, with a white skinned variety of much promise, weight 10½ lb. The fourth prize of £5 was awarded to Mr. Ray, Dodnash-Priory, Burtley, Ipswich, for an immense cropper, a white kidney, but not nearly so handsome in appearance, weight 17½ lb.

Fifteen prizes of £1 each were awarded to the following, all of whom exhibited excellent and promising varieties:—Mr. R. Kingston, Towcester; Mr. T. Pugh, Co. Montgomery; Mr. R. Morton, Ayr; Mr. W. Blaxell, Frawlingham; Mr. H. Staplehurst, Edenbridge; Mr. J. Elliott, Thirsk; Miss Collias, Malvern; Mr. J. Palmer, Kircudbrightshire; Messrs. H. Walsh, Co. Cork; Mr. R. Denholm, Fife; Mr. J. Pagett, Bewdley; Mr. B. Haughton, Barnstaple; C. Carter, Middlesbrough; J. Hampson, Warrington; and Mr. E. A. Bull, Huntingdon. During Saturday, October 16, crowds of interested visitors thronged the exhibition, which, judged from every point of view, was a great success.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of the above Society was held in the R.H.S. Hall on Monday, October 11, Mr. C. H. Curtis presiding. Two new members were elected. One member over the age of 70 years withdrew £20 from his deposit account. The sick pay for the month amounted to £28 14s. 4d. on the ordinary side, and on the State section to £28 2s. 6d., maternity benefits amounting to £18. The Actuary's report on the valuation of the Society was presented to the Committee, and proved highly satisfactory.

NATIONAL CHRYSANTHEMUM.

At the Floral Committee meeting, held at Essex Hall, on Monday, October 18, fourteen novelties were exhibited, and the following awards made:—

Awards.

FIRST-CLASS CERTIFICATES.

Major Chichester.—A showy exhibition Japanese variety of the largest size. The flowers have moderately broad florets and are of elegant drooping form. The colour is rich canary yellow. Shown and raised by Mr. W. HALL, gardener to Major Chichester, Embley Park, Romsey.

Mrs. Peter Murray.—A fine addition to the small section of amaranth-coloured flowers. The blooms are of first-class exhibition size, with broad florets, and of drooping form. The colour shade is purple-amaranth. Shown and raised by Mr. W. HALL, Embley Park Gardens.

Blanche de Poitou.—The white, medium-sized Japanese variety (H. 1. b), which obtained the R.H.S. Award of Merit on October 4. Shown by Messrs. W. WELLS AND CO.

Norover.—A very useful market variety with blooms of medium size, firm substance, and good form (H. 1. b). The colour is chestnut bronze, tipped with dull gold. Shown by Mr. KEITH LUXFORD, Sheering Nursery Harlow.

The Executive Committee met under the presidency of Mr. E. F. Hayes, during the evening, at 35, Wellington Street. There was a capital attendance. The business was of a more or less formal character. Two societies were admitted to affiliation and four new members were elected. Mr. Percy Cragg promised to give a lecture at the conclusion of business on the occasion of the next meeting, on November 15.

Obituary.

Mr. James Brown.—We have to record, with much regret, the death, on October 12, at Knockbrix, Kirkcudbright, of Mr. James Brown, J.P., of Longfield, Heaton Mersey, and Knockbrix. Mr. Brown has been in ill-health for a considerable time. He was well-known in business circles from his membership of the firm of Messrs. Affleck and Brown, Manchester, and was highly esteemed as a shrewd, capable and a reliable man of business. To the horticultural world Mr. James Brown was best known as an ardent rosarian, who devoted himself specially to the Queen of Flowers, but, at the same time, took the warmest interest in horticulture in all its phases. His garden at Longfield was well-known, and that at Knockbrix, the estate he purchased some twenty-five years ago, was famed over a wide area as one of the finest in the south of Scotland. At Knockbrix, Roses were grown on a most extensive scale, and the best of both old and new varieties were skilfully cultivated. The gardens were a great delight to the many horticulturists who enjoyed his hospitality from time to time, and his passing away will be keenly felt by those who had the privilege of visiting his gardens and hospitable home. Mr. Brown is survived by Mrs. Brown, who is a daughter of the late Alderman Sir J. Southern, of Manchester, and by a son and two daughters. His loss will be keenly felt by the many who had the pleasure of his acquaintance, and nowhere more than among the members of the National Rose Society, of which body he was an honorary vice-president, and in whose success he took the deepest interest.

TRADE NOTE.

The secretary of the Chamber of Horticulture has received an official notification from the secretary of the Railway Clearing House to the effect that the railway companies have agreed that as from November 1, 1920, flowers and plants in soil, or in soil in pots, when conveyed in the guard's van by passenger train will be accepted according to the following conditions and charges:—(a) If packed in substantial crates or wooden boxes so constructed as to admit of other goods being loaded on top thereof, charges will be—by company's risk, the general parcels scale, including collection and delivery; by owner's risk, the owner's risk scale, including delivery. (b) When not so packed—one foot or under in height—by company's risk, the general parcels scale, plus 50 per cent, including collection and delivery; by owner's risk, the general parcels scale, including delivery. Above one foot in height—by company's risk, the general parcels scale, plus 25 per cent., including collection and delivery; by owner's risk, owner's risk scale, plus 25 per cent., including delivery.

Prior arrangements must be made with the railway companies in the case of traffic conveyed under clause (b) above, as to the quantity which can be accepted for forwarding, when such traffic exceeds 1 cwt. The above rates will supersede any existing special rates for this traffic. Traffic in truck loads will continue to be charged as at present—in company's vans, loaded van scale; in owner's vans, as carriages. The companies will in all cases reserve the right to forward the traffic by such trains as may be convenient to them.

The above arrangements were mutually agreed to at a meeting at the Railway Clearing House between representatives of the railway companies and the Chamber of Horticulture, British Florists' Federation, Horticultural Trades' Association and the Royal Horticultural Society, on September 29, but at the special request of the railway representatives, no announcement could be made until the railway companies had finally given their decision.

ANSWERS TO CORRESPONDENTS.

ASPARAGUS FOLIAGE TURNING YELLOW: *H. B.* The foliage was perfectly clean and there were no evidences of any previous attack by insects or fungous disease. We think the source of the trouble will be found at the roots, which have entered some uncongenial soil which is either too wet or too dry.

CUCUMBER DISEASED: *L. F.* The fungus on the cucumber fruit is *Cladosporium scabiei*. It is doubtful whether the disease noticed on the leaf is the same, and specimens of diseased leaves should be sent for examination. It is probable that the ashes referred to will have little value (other than mechanical). A chemical analysis, which we do not undertake for correspondents, would be necessary to obtain definite knowledge.

GRAPES DISEASED: *Foreman Gardener.* The berries reached us in a condition of pulp. We suspect the complaint to be spot disease (*Gleosporium ampelophagum*). See reply to *S. E. A., Gard. Chron.*, October 2.

NAMES OF FRUITS: *J. E. F.* 1, Pitmaston Duchess; 2, Beurré Superfin; 3, Thompson's; 4, not recognised; *C. C.* 10, Ribston Pippin; 11, not recognised; 12, Emperor Alexander; *South Hay.* 1, Chelmsford Wonder; 2 and 4, Adams's Pearmain; 3, not recognised; 5, Duchess Favorite.—*H. G.* The seedling appears to be of fair quality, but very soft fruited, and resembles a small Emperor Alexander.—*E. M.* In all probability a local seedling, but apparently of no particular merit.

NAMES OF PLANTS: *J. R. A.* 1, *Rosa anemonae-flora*; 2, *Eucalyptus coccifera*; 3, *Escallonia illinita*.—*Dundagh:* 1, too withered to identify; 2, *Leucothoe catesbaei*; 3, *Hydrangea quercifolia*; 4, *Clethra alnifolia*.—*W. H. B.* *Staphylea colchica* (Bladder-nut).—*L. S. A.* 1, not recognised, send in flower; 2, *Viburnum Tinus*; 3, *Chrysanthemum uliginosum*; 4 and 5, varieties of *Michaelmas Daisies*, too withered for identification.—*W. R. P.* 1, the flowering spray represents a varietal form of *Myrtus communis*; 2, leaf too withered for identification.—*M. V.* and *E. P.*: We cannot undertake the naming of garden Roses. Flowers of these varieties should be sent for naming to the nurserymen with whom you deal.—*J. W.*: A species of *Mesembryanthemum*, probably *M. acinaciforme*; send when in flower.

PRUNING RHODODENDRONS.—*Jack:* The best time to prune Rhododendrons is in April or May, but it must be borne in mind that shoots which are cut back will not produce flowering growths for at least two years. As your plants are large and well established, we suggest you get advice from someone who understands the pruning of Rhododendrons, and who is able to inspect the plants.

SAND TENNIS COURT: *H. G.* For binding the surface of sand tennis courts apply calcium chloride in solution, at a strength of 1 lb. in one gallon of water, with a rose watering-can. One gallon of the solution is sufficient for each three square yards of surface.

VALUE OF FRUIT TREES IN A CHANGE OF TENANCY: *J. and A. A.* There is no standard value. Naturally, it varies with the condition of the trees, and is really a matter for a local valuer on the spot. However, if £1 per tree is the local custom on exchange of tenancy, we advise you to accept that sum.

WHITE SPANISH ONIONS: *J. C. W. and S.* No disease was apparent in the specimens and we conclude that the early division of the bulbs is due to some check to growth.

Communications received.—A. P.—B. T.—E. J. G.—Interested.—J. S.—I. S. A.—H. W. R.—H. M.—F. T.—J. R.—W. W.—G. C.—E. F.—J. S.—R. E.—X. V. T.—C. T.—A. G. T.—W. W.—S. L. Co.—C. H. C.—E. P.

THE

Gardeners' Chronicle

No 1766.—SATURDAY, OCT. 30, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.3°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, October 27, 10 a.m.: Bar. 30.35, temp. 59°. Weather—Slight Fog.

The latest instalment of the results obtained by Mr. C. W. Richardson in his experimental studies carried out at the John Innes Horticultural Institution on the genetics of *Fragaria** contains information of considerable value to the systematic raiser of new varieties. From the cross between *grandiflora* and *chinesis*, a mixed progeny resulted containing plants with leaves nearly as round as those of *chinesis* and other plants with the long leaves of *virginiana*. An examination of the results leads to the conclusion that *grandiflora*, although it resembles *chiloensis* (or *chinesis*) more than *virginiana*, is a heterozygote, which has probably arisen as the result of a cross and not as a sport. The cross *F. chinensis* × *F. chiloensis* gives plants which are in every way strong-growing, and Mr. Richardson states that a strong race is to be expected when *chinesis* or *chiloensis* is used. He is also of opinion that there is no necessary incompatibility between large size and good flavour, although, since both are complex characters, each depending probably on several characters, the chance of uniting these two desirable qualities in one race are but small. In this connection it is interesting to note that on his system of estimating flavour for the purpose of his experiments, Mr. Richardson awards Royal Sovereign eight points out of a possible twelve (Filbert Pine receives nine points for flavour, although of course, in other respects it is far

behind Royal Sovereign). Yet in an estimate of flavour of *F₁* seedlings from Royal Sovereign selfed, out of thirty-three plants, the flavour of whose fruit could be estimated, three were judged to be worth nine points, twelve worth eight, seven worth seven, and ten worth six or lower. Of course, the estimate of flavour is difficult and uncertain, weather and the personal equation coming in to obscure or mislead the judgment, nevertheless, having regard to the large quantity of this variety which is grown, the prospect of a permanent amelioration of the flavour even by only one point should not be lost sight of by the hybridist. Mr. Richardson comments on the irregularity of germination of the seed of *Fragaria*, some taking five days and some ten weeks to germinate, and points out that, as a general rule, the larger the seed the sooner it will germinate. It is probably also that time of sowing accounts for some of the irregularity, and that seed sown immediately after the fruit is gathered germinates more rapidly than fully matured seed. With respect to nomenclature the author is of opinion that the *chinesis* plants which were obtained from Kew, though they differ from *chiloensis* in their greater hairiness, smaller size, lighter colour and more shiny surface, are to be regarded as a sub-species of *chiloensis*. The systematic investigation of the genetics of such a plant as the Strawberry must of necessity be laborious and slow, but we trust that Mr. Richardson will continue this line of work and are sure that if he does, he will confer a great benefit on raisers of new kinds by giving them information which will admit of the use of less haphazard methods than are in the present state of knowledge available.

National Rose Society's Provincial Show in 1921.—From a report of the Ipswich and East of England Horticultural Society's Annual General Meeting held on the 18th inst. we learn that the National Rose Society will hold its provincial show in 1921 at Ipswich.

Reclamation of Waste Land.—As the subject of reclaiming waste land and bringing it under cultivation is one of national importance the meeting of the Association of Economic Biologists, convened for Friday, November 5, should be of unusual interest. The meeting will be held at 2.30 p.m. in the Botanical Lecture Theatre, Imperial College of Science, South Kensington. Prof. F. W. Oliver, F.R.S., will lecture on The Reclamation of Waste Land by Botanical Means, and Dr. E. J. Russell will lecture on The Reclamation of Waste Land by Agricultural Means.

Retirement After 51 Years' Service.—Mr. Giles Bloxham, gardener at Brickhill Manor, Great Brickhill, Bletchley, recently retired after 51 years' service with the Duncombe family. Mr. Bloxham was appointed gardener at Brickhill Manor in 1869 by Sir Philip Paunceforte Duncombe, Bart., grandfather of the present baronet. Twenty years later, on the retirement of the estate bailiff, Mr. Bloxham was asked to accept the dual office of gardener and bailiff, and he has held these positions since, serving successively under Sir Philip Paunceforte Duncombe, Sir Philip Henry Paunceforte Duncombe and through the long minority of Sir Everard Paunceforte Duncombe. Mr. Bloxham will be remembered by some of the older generation as a successful exhibitor. At the International Horticultural Exhibition, held at Carlisle in September, 1897, he won eleven first prizes for fruits and vegetables, and it is interesting that the most important prize he won there was a sewing machine, offered for the best collection of 12 dishes of vegetables. A dish of School master Potatoes, exhibited by Mr. Bloxham at the International Potato Show held at the Crystal Palace, was one of the finest in the

exhibition. During the time when Mr. Bloxham was in Messrs. J. Veitch and Sons' service, the International Exhibition of 1886 was held at South Kensington, and he remembers the large consignment of plants brought from Japan by Mr. John G. Veitch for that exhibition. Mr. Peter Blair, of Trentham, was one of Mr. Bloxham's pupils, during the time the latter was propagator foreman at Shrubland Park, Ipswich, where Mr. T. Blair, father to Mr. Peter Blair, was gardener. Mr. Bloxham served his apprenticeship under the celebrated Mr. W. Coleman, gardener at Eastnor Castle, Herefordshire, at that time famous for the high quality of the fruit cultivated there.

Monument to an Apple.—The State Horticultural Association of Pennsylvania has erected a monument marking the original site where the York Imperial Apple was raised, on the farm of Mr. J. C. Schmidt, two miles south of York, Pennsylvania. The monument is of stone with a bronze plate bearing the following inscription: "The York Imperial Apple was first propagated about 1820 in this field by Jonathan Jessop. It is the most widely-known variety of Pennsylvania origin and has contributed largely to the horticultural prosperity of the State. A tribute by The State Horticultural Association of Pennsylvania, 1920."

The Ripening of Tomatoes.—Experiments carried out by Mr. Charles E. Sando* show that attempts to ripen Tomatoes artificially have resulted so far only in the production of fruit of inferior flavour. In such fruit the acid content is far higher than in naturally ripened Tomatoes, and this increase of acidity is yet more marked in fruit which is ripened without a free circulation of air.

Helichrysum dimorphum.—The New Zealand plant, *Helichrysum dimorphum*, discovered and described by Cockayne in 1915, is the subject of an interesting article by Mr. A. W. Wall, in *The Transactions of the New Zealand Institute* (Vol. LII). Mr. Wall suggests that *H. dimorphum* is a hybrid between *H. filicaule* and *H. deprenum*, and the fact that, unlike either parent, it is a true climber, he ascribes to the combination of the scandent habit of *H. filicaule* with the strength and solidity of form of *H. deprenum*. In flower *H. dimorphum* closely resembles *H. deprenum*. The supposed hybrid and the two parents occupy the same locality. The leaf characters are very like those of *H. filicaule*.

Attalea Cohune.—The hard shell of the Cohune Nut of Honduras, the fruit of the *Mamea* Palm, was found when carbonised to give protection against poison gases used in the war. According to *Plant Immigrants*, No. 172, Aug., 1920, it is probable that the use of the nut for this purpose may lead to a further industry, that of the extraction of the oil from the kernel. It has long been known that the oil of the Cohune Nut is of high quality and that great groves of the trees exist in Honduras.

Special Awards at the International Flower Show at Antwerp.—The authorities in charge of the "Floralies Internationales" at Antwerp have now made the special awards offered early in the year and open to competition at all the exhibitions held during the season. The medal offered by H.M. King Albert has been awarded to MM. Vilmorin-Andrieux and Co., Paris; H.M. Queen Elisabeth's Medal to the Chamber of Horticulture, London; and Prince Leopold's prize (bound volume of *Royal Greenhouses at Laeken*) to Nederlandsche Tuinbouwraad, The Hague. Each of these three exhibitors were also awarded the Grand Prize of the International Florales of Antwerp, 1920. A Grand Prize was granted to the Plantations Department, Municipality of Antwerp, and to M. Fr. Naels, of Wilrijk. The following received a Diploma of Honour:—Madame Good-Engels, Antwerp; M. Arthur Brys, Antwerp; M. Léon Kerkvoorde, Wetteren; M. Albert Kreglinger, Antwerp; M. A. Op de Beeck, junr., Putte-lez-Malines; M. Aug. Reekens, gardener to

* Some Notes on *Fragaria*, by C. W. Richardson. *Journal of Genetics*, 10, 1 July, 1920.

* The Process of Ripening in the Tomato, Considered Especially from the Commercial Standpoint, U.S. Dept. of Agriculture, Bulletin No. 829.

M. Lejeune, Antwerp; Messrs. Stuart Low and Co., Jarvisbrook, England; the Tuin en Landbouwwerbond, of Antwerp, and the "Verbond der Antwerpsche Hoveniers."

Golden Wedding of Mr. and Mrs. Brotherston.

—Mr. and Mrs. Robert P. Brotherston, of Tynninghame, East Lothian, celebrated their golden wedding a few days ago. They were married at St. John's Church, Stratford, on October 25, 1870.

The Production of Glycerine from Sugar.—It is a well-known fact that during the fermentation of sugar by yeast, not only are alcohol and carbon dioxide produced, but also small quantities of glycerine. During the war, this natural method of producing glycerine from sugar was closely studied and developed by German chemists. It was found, for example, that the addition of alkalis to the fermenting liquid led to an increase in the amount of glycerine from 3 per cent. to so much as 12 or more per cent. At this stage a difficulty was encountered owing to the fact that the alkaline liquid served as a favourable medium for the development of bacteria. This difficulty was overcome by the addition of sodium sulphite, which acts as a poison to many micro-organisms, but does not affect yeast adversely. The addition of this substance to fermenting sugar led to a yet further production of glycerine, the amount of which reached from 25-36 per cent. of the sugar used; it also led to the formation of another "war material," namely, acetaldehyde. It is stated that it was by these means that the Germans were able to supply the deficiency of two substances essential to the manufacture of munitions.

An Improved Method of Seed "Sterilisation."

—It is a common practice to treat with an antiseptic solution, such as copper sulphate or formalin, the seeds of cereals and other plants, the seed coats of which are suspected and known to be infected with the spores of pathogenic organisms. Unfortunately, the usual method of treatment generally leads to a decrease in the germinating capacity of the seed, and also to irregularity of germination. Mr. H. Braun, of the Laboratory of Plant Pathology, Bureau of Plant Industry, U.S. Department of Agriculture, has introduced an improvement* which it is claimed increases the efficacy of the method and produces no ill effects on the germination of the seed. The improvement consists in a short preliminary soaking (ten minutes) of the seed in water before steeping it in the antiseptic solution. It is suggested that the method owes its efficacy to the fact that since the preliminary soaking results in the taking up of a large amount of water by seed, subsequent steeping in the antiseptic leads to a smaller quantity of the poison passing the seed coat. It is further suggested that the preliminary soaking encourages the micro-organisms to begin to germinate so that they are in a highly susceptible state when the time comes for applying the antiseptic.

Belgian Award to British Horticulture.—The following letter has been received by the Chamber of Horticulture from the President of the Antwerp Exhibition, announcing awards granted to the Chamber for the British exhibits at the opening show in May last:—

The President, Chamber of Horticulture, London.

Dear Sir,—We have the honour to inform you that the Floral Committee of the Antwerp Exhibition have awarded to the British Chamber of Horticulture the Gold Medal of Her Majesty Queen Elizabeth. They have, at the same time, awarded to them the "Grand Prix" of the Exhibition. We would take this opportunity of according to you, with our warmest congratulations, our hearty thanks for the splendid exhibit which you contributed. We should be obliged if you would be good enough to advise us in what way we could most safely forward the medal. The certificates will be sent to you later.

CHARLES DE BOSSCHERE,
President.

Amongst those who contributed to the British
* Presoak Method of Seed Treatment, *Journal of Agricultural Research*, XIX. 8.

exhibitors were Messrs. Allwood Bros., Anthos and Co., C. Engelmann, Guernsey Growers' Association, Hampton Growers' Association, D. Ingamells, F. Ladds, Geo. Mouro, Ltd., Harry G. Mount, Spencer W. Mount, E. H. Page and Sons, Ltd., W. Pinker, T. J. Poupart, John Rochford and Sons, B. Shearn and Son, Arthur Stevens, Ltd., Ernest Stevens, Ltd., Stuart Low and Co., and E. Wallace and Sons. The International Horticultural Exhibition was a section of the Antwerp exhibits of 1920, arranged in conjunction with the seventh Olympiad, the whole being under the patronage of the King of the Belgians. On the occasion of the opening, His Majesty expressed his deep appreciation of the generous way in which British horticulturists had shown their sympathy with Belgium, and of the magnificent display they had made.

Condition of the Vegetable Crops on October 10.—In reporting on the vegetable crops on October 10, the Horticultural Superintendents and Instructors under the Ministry of Agriculture state that the generally mild and showery weather of the previous month was very beneficial to the crops, both root and green crops making good growth. In the Midlands and in the low-lying situations over the country early frosts cut down Runner Beans and Marrows. Cabbage planting could be proceeded with rapidly, the weather and soil conditions favouring this work. Cultural operations were not hindered to any extent, but weeds are still fairly prevalent, and cultivation generally has not yet reached pre-war standards. The condition and prospects of the various crops are given in the following summaries. Probable yields this year are given as compared with an average crop, which is taken to mean one which is about equal to the average yield of the past ten years. Beet-root is healthy and has improved during the past month. The roots are generally of good quality, though in Yorkshire they are rather large and coarse. They are now being lifted in fine condition in the south. Globe varieties seem to have done rather better than long varieties in many districts, but the total crop is estimated at about average in most parts of the country. The yield of Carrots is estimated to be a little below average over the whole country; in Lincolnshire about average crops will be obtained, some fields giving very heavy yields, whilst others are badly grubbed. The Isle of Ely also expects average or slightly over average crops, but in many cases a large proportion have run to seed. Roots are heavy in Yorkshire, and, although there is rather much forking, an average yield is expected. In the Carrot growing district of Nottinghamshire there are some excellent crops; and Carrots sown after early Potatoes in Kent are now very promising. Generally the crops in the eastern counties are clean and of good quality, but in the less important counties the Carrot fly-grub has caused a fair amount of damage, and in Essex the roots have been injured rather severely by slugs and wireworms. With the mild weather Parsnips are still growing well in most districts, but in some counties, especially in the Midlands, fly is causing some damage, and in Cornwall rust is developing. Over the whole country about an average yield is expected; in Middlesex and Kent the crop looks very well and should give well over average results, but in Suffolk and Essex yields will be poor. Bunching Turnips have grown well lately and the crop is now expected to be somewhat over the average, reports from practically all counties stating that the crop is vigorous and healthy. Late crops have done very well, and the quality of those now being pulled is very good. Cabbage for autumn use are healthy and hearty well, but caterpillars have caused some damage, especially in the south and east. In Essex and Middlesex the crop is well over average, and in very few counties is the yield less than usual. Cabbages for spring use are also promising; the seed germinated well and plants are strong, though in some places they are rather too forward. Planting is now proceeding under favourable conditions, and the earlier-planted crops are well established. The weather has encouraged quick growth of Savoys, which are very vigorous.

They are often rank, but they are hearty well and in many districts they are now about ready for the market with prospects of heavy crops. Heading Broccoli is healthy and vigorous in most districts, and has made good growth during the month. The crop will probably be early if the mild weather continues, and the yield should prove slightly over average. In a few counties the crop is thought to be too soft to stand severe weather. In Cornwall it is growing vigorously and the yield is expected to be heavy, although the plants are rather sappy, and late caterpillars are beginning to do some damage. Sprouting Broccoli is also growing well, and a good early crop is expected. These, too, are rather sappy and may not stand severe weather. Very few reports have been received as regards Spinach, but generally an average crop is expected. In Middlesex autumn sowings of the prickly variety have germinated evenly, and Perpetual Spinach is making vigorous growth. Crops are healthy in Hertfordshire, and in fair condition in Cambridgeshire. In Lincolnshire Celery will give only a poor yield, as the crop has suffered fairly severely in some parts of the county from leaf-spot and to a lesser extent from fly. In Kent the yield will probably be somewhat over average as there is a full crop, which is generally healthy, though rust has done some damage in places. In the Ely district and in the Midlands, except in Worcestershire, crops look well on the whole and should give average yields. The early crops are best as the later plantings have been damaged by fly. In Yorkshire crops are in good condition, but in Lancashire and Cheshire yields will be very poor, and in most parts of Wales fly and leaf-miner have done a good deal of damage. On the whole Leeks will probably give about average crops.

Appointments for the Ensuing Week.—Tuesday, November 2: Royal Horticultural Society's Committee's Meeting, and National Chrysanthemum Society's Autumn Show at R.H.S. Hall, Vincent Square, Westminster; Southampton Horticultural Society's Autumn Show (2 days); Scottish Horticultural Association Meeting, Wednesday, November 3: Royal Agricultural Society's Council Meeting; Sambiton Chrysanthemum Society's Exhibition; Hornsey and District Chrysanthemum Society's Show (2 days). Thursday, November 4: Oxfordshire Horticultural Society's Show at the Town Hall, Oxford.

"Gardeners' Chronicle" Seventy-five Years Ago.—*The Amateur Gardener.*—Nature, wild and untended, will produce luxuriantly the indigenous fruits of the soil, but demands forethought and labour from her dependents, before she yields to them her most valuable riches. By observation man has improved upon the past, and better methods of cultivation are constantly discovered. Now, in this process of induction, or the Baconian method, as it is called in philosophy, the amateur gardener has employed efforts which have often been crowned with eminent success. Those who till hundreds of acres as the means of subsistence have seldom the courage to perform experiments on a large scale, but the owner of a small garden can do so with pleasure unmingled with the fear of loss. Agriculture has thus been indebted to the lovers of gardening for many discoveries, by which the wealth of nations has been increased, and every amateur, however limited be his domain, may hope to add to the mass of knowledge. If, by the application of manure in some novel manner, or by experiments in hybridising or crossing, a vegetable may be made more productive, the application of this principle may result in a grand national benefit. I have a great respect for working gardeners of all grades, for this reason, that they are the silent and modest precursors of those great changes by which the vegetable property of a country acquires an enhanced value. Whether, therefore, you are delighting in an exclusive garden adjoining a country residence, or looking proudly on the beauties of a small suburban retreat, I thus remind you of a very important argument to be employed in the defence of your pursuits.—*H. B., Gard. Chron., November 1, 1845.*

NOTICES OF BOOKS.

Lawns.*

As years go on and grass becomes of increasing importance for pleasure or recreation in this country, so do the science and the art of cultivation and the treatment of the ground become essential to success. Some species of grass will grow under what appear to be very adverse conditions, but not all grasses are suitable for the making of lawns. Messrs. Sutton and Sons have been experts for many years in all that pertains to grass, and the thirteenth edition of their book on the subject shows evidence of keeping abreast with the times. Comparing this with an old edition, the number of pages has increased from 65 to 79, including new chapters on annual top-dressing, fungous growths and diseases, lawn pests, and bowling greens. The chapter on the destruction of weeds has been greatly extended and advice special to the eradication of each species fully given. *Cerastium vulgatum* is said to be annual, but all the forms are perennial except the variety *pentandrum* on sea shores. *Sagina procumbens* is also perennial, though liable to be confused with *S. apetala* and its allies, which are often procumbent in open situations. *S. procumbens* is often described as a moss, but in this work is properly placed amongst plants that produce seeds. No mention is made of the Summer Chafer (*Rhizotrogus solstitialis*) amongst lawn pests, though this feeds on the roots of grass and is very abundant where it occurs. The number of lawn grasses has not been increased, though many gardeners and green-keepers are on the outlook for others suitable for sandy or poor soils. Doubtless the difficulty in getting seeds is the reason. Even *Poa annua* is quoted by the ounce at unprofitable prices. It is here classed as a weed, as is *Poa compressa*. *Poa memorialis* is commended for its early growth in spring, but *P. pratensis* also has this merit. *Trifolium repens*, *T. minus* and Yarrow are recommended for withstanding drought, which they do admirably, but many owners of lawns object to them. Paper, printing and illustrations are admirable.

Farm and Estate Book-Keeping.

A work useful to those who have to keep accounts in gardens, entitled *Farm and Estate Book-Keeping*, third edition, by Herbert Taylor, is issued by Mr. Arthur Fieldhouse, 66, West Parade, Huddersfield, price 6s. 6d. net. The book deals with such subjects as dairy accounts and estate accounts, and gives examples of how the wages' book and cash book should be kept; it also gives useful information on the subject of taxes, tithe, rates, insurance, tenants' rights and compensation. The work is freely illustrated with examples of various accounts.

NEW AND NOTEWORTHY PLANTS.

THE FORMOSAN REDWOOD.

TAIWANIA CRYPTOMERIODES, HAYATA

PREVIOUS to the cession of the island of Formosa to Japan by China about twenty-five years ago, our knowledge of its flora was almost wholly confined to what was growing near the coast. Robert Fortune visited the island in 1854, and was followed by Charles Wilford, the Kew collector, four years later, and by Richard Oldham, another collector from Kew, in the early "sixties." After them came a succession of botanists, who made collections near the coast, the most important probably being that made by Prof. A. Henry, who was there in 1893-4. Since then the botanical exploration of the island has been vigorously carried on by the Japanese, and the results published by Dr. B. Hayata.

Exploration by the Japanese has revealed the existence, amongst many other new plants, of two of the most remarkable of the world's Conifers. One is a new Cypress, *Cupressus formosensis*, which grows at altitudes of 6,500

feet to 8,000 feet, and is the largest Conifer known in the Old World. According to Mr. E. H. Wilson, the maximum height of the tree is 180 feet, and the girth of the largest specimen found up to now is 64 feet. A picture of this tree is given as the frontispiece to Vol. III. of Clinton-Baker's *Illustrations of Conifers*, where its girth is given as 67 feet and its height 125 feet. It grows on the slopes of Mount Morrison, the loftiest mountain of Formosa. Through the agency of Mr. Clinton-Baker, seeds of this Cypress were obtained and distributed to various gardens at home and abroad in 1911. It promises to be hardy at

Mr. Wilson, a few weeks ago, brought over some half-a-dozen plants, but he does not consider the tree will be hardy in this country except in the south-western counties and similarly mild localities. There is an excellent figure of a cone-bearing twig in Clinton-Baker's *Illustrations of Conifers*, Vol. III., p. 75. From this it will be seen that the adult foliage is in shape, size and arrangement very similar to that of *Athrotaxis laxifolia*, each leaf being about one-eighth of an inch long, keeled at the back and incurved. The cones are half an inch long and three-eighths of an inch wide, rounded at the top. As is the case with many



FIG. 99.—TAIWANIA CRYPTOMERIODES.

Kew, when fully established, although it has once or twice been touched by frost.

The other remarkable Conifer is *Taiwania cryptomerioides*, a small tree of which is illustrated in Fig. 99. If the Cypress just mentioned is the bulkiest, the *Taiwania* is the tallest of the Old World Conifers. Wilson gives its average height as from 150 feet to 180 feet, but specimens over 200 feet high are known. The trunk he describes as sometimes 30 feet in girth, quite straight and bare of branches for 100 feet to 150 feet up—"a strikingly distinct tree, singularly like an old *Cryptomeria*." On his way to Australia from the Arnold Arboretum, by way of this country,

Conifers, the juvenile foliage is very distinct from the adult; on the plants recently introduced by Mr. Wilson the leaves are awl-shaped and three-eighths of an inch to half an inch long. I do not know at what age the adult foliage begins to appear, but in the graceful tree here figured it is apparently still all of the juvenile type.

It may be mentioned that in the July number of the *Journal of the Arnold Arboretum* (Vol. II., p. 25) there is an extremely interesting sketch of the ligneous flora of Formosa, from which many of the particulars given above have been taken. W. J. Bean, Royal Gardens, Kew.

* *Garden Lawns, Croquet Grounds, Putting Greens, Cricket Grounds, Bowling Greens.* By Sutton and Sons, Reading. Price 2s. 6d.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

General Remarks.—Shading of every description may now safely be dispensed with. Canvas blinds should be removed and dried thoroughly before they are stored for the winter. Small repairs should be done at once, and a note taken of any blinds that need replacing. Wood-lath blinds may remain, if thought desirable, for use on cold, frosty nights. At this season Orchids need all the sunlight possible, and, when the temperatures are raised by sun-heat, a little fresh air should be admitted, but cold draughts passing over the plants must be prevented. The temperatures of the various divisions may be slightly reduced, and the following figures should be adhered to so far as circumstances will admit:—Stove or warm house, day 70°, night 65°; Cattleya and Mexican house, day 65°, night 60°; intermediate house, day 60°, night 58°; cool or Odontoglossum house, day 55°, night 50°. The day readings will fluctuate slightly in accordance with the weather. A rise of a few degrees with sun-heat will be beneficial, but the night temperatures should be kept as even as possible with the employment of fire heat. The stoker at this period of the year should take notice of the weather, and bank the fires accordingly. The amount of damping will depend on the weather, the temperature of the houses, and the position they occupy. Structures built in low-lying districts will require less damping than those more exposed on higher ground; during dull, mild weather, the interior of the houses will remain moist for a longer period than when it is frosty and much fire heat needed. Damping should always be done with a rising and not a falling temperature. If the grower is fortunate enough to have charge of houses where the boiler power and number of pipes are capable of meeting all demands without undue driving of the fires, little difficulty should be experienced in maintaining the correct atmospheric conditions. Drains from the roof rafters must be guarded against, or some of the young growths may be damaged.

Watering.—Watering, always an important detail in Orchid culture, must be carried out with care and discretion, and the condition of each plant studied before applying water. Plants producing their flower spikes must not suffer from drought, and the same remark applies to those that are growing and rooting freely, but any that have completed their season's growth should be afforded only sufficient moisture to maintain the pseudo-bulbs in a plump, rigid condition. With the bulk of the repotting completed, an opportunity occurs to do any necessary cleansing of the houses, and to ascertain if any of the plants are infested with scale insects. In districts near large manufacturing towns, the glass on the outside needs washing two or three times during the winter. When this work has been done a start may be made inside, for dirty glass excludes light which is essential to plant life during the dull months of the year.

PLANTS UNDER GLASS.

By JOHN CUTTS, Foreman, Royal Botanic Gardens,
Kew.

Lily-of-the-Valley.—By the use of retarded crowns, it is an easy matter to maintain a regular supply of flowers of Lily-of-the-Valley, as the plants quickly respond to forcing. The crowns should be packed into 48-sized pots; or, if simply required for the supply of cut flowers, they may be planted closely in small cutting boxes. Cover the pots or boxes with clean Moss, and stand them for a few days on an open bed or bench in a warm house, after-

wards transferring them to a close case in the forcing house, where they may be given a bottom heat of 75° to 80°. Success in forcing most hardy plants depends largely in introducing them gradually to a high temperature; subjecting such plants directly to much warmth too often results in failure. Ordinary Lily-of-the-Valley crowns, whether imported or home-grown, should be placed in pots or boxes, and stood in an exposed position out-of-doors. All plants of this description force much more rapidly after being freely exposed to the weather.

Herbaceous Plants for Forcing.—Suitable kinds of hardy flowers may now be placed in suitable-sized pots or boxes, according to the requirements of the establishment. They include such subjects as *Dicentra* (*Dielytra*) *spectabilis*, *Astilbe* (*Hoteia*) *japonica*, *Polygonatum multiflorum* (Solomon's Seal), *Spiraea astilboides* and *S. palmata*. The newer pink and rose-coloured *Astilbes* Peach Blossom and Queen Alexandra should also be grown. All the above-mentioned plants when potted should be stood in the open, with the pots plunged in ashes to protect them from frost.

Paper-white Narcissus and Roman Hyacinths.—Towards the end of the present month the earliest potted batches of these bulbs may be introduced to heat.

THE FLOWER GARDEN.

By SIDNEY LEOO, Gardener to the Dowager Lady
NUNBURNHOLME, Warter Priory, Yorkshire.

Colour in the Garden in Winter.—The introduction of new species and varieties of hardy trees and shrubs is gratifying, especially in regard to kinds which allow of effective display during the winter. Beauty of form and colour are not obtained by the massing of evergreens. A judicious planting of both deciduous and evergreen species is desirable; these may be grouped either separately or together. Each type provides admirable specimens. Light, space and contrasts are essentials in the relief of sombre scenes; therefore, first consider the existing arrangement of the background, or outskirts of the garden. The stems of trees having a distinctive form or colouring, such as a Silver Birch or a Gnarled Oak, should be clearly visible, and subjects planted in close proximity should either harmonise or form a direct contrast. It is sometimes advisable to remove the lower branches of Pines, in order to exhibit a greater length of stem; the same remark applies to many other trees. Dwarf *Furze*, *Daphne Mezereum*, *Laurustinus*, *Berberis* in variety, and the catkins of *Garrya* and *Hazel* are effective in the foreground; whilst *Saxifraga*, *Heuchera*, *Hellebores* and hardy *Heaths*—especially *E. carnea* and *E. codonodes*—are pleasing when planted in various positions. Red and yellow *Willows* may be cut hard back in Spring to furnish more colour, but those having sufficient space to display their true form should not be thus treated. Varieties of *Acer* and *Prunus Davidiana* are worthy of inclusion; the former for their differently coloured twigs, and the latter for its blossoms in both forms, pink and white. *Winter Jasmine* is invaluable, and a cosy corner should be chosen for *Chimonanthus fragrans* and *Winter Honeysuckle*. It is commendable to plant subjects like *Pernettya*, *Cotoneaster* and *Hollies* which carry bright berries; the birds may remove the berries, but the foliage remains and is quite distinctive. When planting, remember the value of Autumn tints, and the first flowers of Spring; thus will the attraction of the garden be enhanced.

Monthetia.—The best results with *Monthetia* are obtained by an annual thinning of the corms; these may be lifted, divided and replanted six inches deep now. In heavy, wet soils, defer the planting of the corms until early Spring; in this case, lift the corms at this season, hang them in an airy shed to dry, and finally store them in sand in a cool, frost-proof place. Useful varieties include: *Pottsii grandiflora*, *Aurore*, *Solfatara*, *Etoile de Feu*, and *Drac d'Or*.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.
The Node, Codicote, Welwyn, Hertfordshire.

The Mulberry.—The fruiting season of the Mulberry extends from the middle of August to about the first or second week in October, although much depends on the season. The tree is generally trained as a standard and succeeds best in a rich, deep, somewhat moist loam. The situation should be well sheltered from northerly winds, but open to the sun on the south side. Very little pruning is required beyond maintaining equality of growth among the branches. If the trees are not planted on grassland long grass mowings should be spread beneath them in a thin layer to prevent injury to such fruits as may fall before they can be gathered.

The Medlar.—Medlars are old-time fruits, valuable for the making of jelly and providing a change for dessert. The trees will thrive in almost any garden, but they produce much finer fruit when growing in a rich loamy soil. The fruits should be allowed to remain on the tree until they part readily from the twig when uplifted by the hand, which they do generally about the second week in November. Choose a dry day for the gathering of the fruits, and store them in the fruit room, when they will soon be ready for use. Nottingham and Royal are two good varieties.

The Quince.—The Quince is a useful fruit for the making of preserves and flavouring. In cold districts the tree should be planted in a somewhat sheltered position; it will grow in any good garden soil. Very little pruning is required beyond the removal of over luxuriant shoots and weak growths that cross each other. The fruits will, in some cases, be ready for gathering, but if there is no danger of severe frost they may be allowed to hang until well into November.

Figs.—The best Fig for outdoor cultivation is Brown Turkey, and if variety is required Brunswick and White Marseilles may be included. Figs should be grown in a warm position against a wall where they will receive the maximum amount of sun heat. Almost any soil is suitable, but it should not be too rich or the trees will grow luxuriantly and fail to fruit. The best results are obtained when the roots are in a restricted area. The shoots need to be trained thinly.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Pines.—After having arranged the plants in each compartment likely to suit them for the next two or three months, the most important work will consist in attention to details that will enable the plants to continue to make satisfactory progress. Growth should not be encouraged much throughout the winter; the safest and best plan is to give the plants a thorough rest by gradually reducing the amount of heat and moisture. Late plants with swelling fruits require water occasionally, but no rule can be laid down for its application.

Succession Houses.—The first batch of selected Queen Pines now resting will scarcely require any more water until the time arrives to commence forcing. If there is any danger of the roots suffering from drought the plunging material surrounding the pots should be moistened with tepid water and pressed firmly around them. Let the bottom heat range from 65° to 70° with a night temperature of 60° and 65° to 70° by day. Growing stock to succeed the plants just referred to need a little more warmth and moisture, as most of these plants will make more growth before they throw up their fruits in the spring. If the plunging material is moist the plants will require very little direct watering through November and December. Plants intended to be wintered in 6-inch and 7-inch pots, having almost filled the pots with roots, need to be examined at short intervals for watering, as extreme drought

would cause them to fruit prematurely when started in the spring.

Figs.—With very few exceptions ripe Figs will now be over and the cleansing of the house and trees must receive attention. Let the trees have conditions that will favour the ripening of the shoots. Early plants in pots and tubs should be placed under protection, and any pruning necessary done at once. Cleanse and paint the houses and coat the walls with hot lime mixed with flowers of sulphur; use strong, soapy water for washing the woodwork and add sulphur to the water where scale or mealy bug has been troublesome. Figs established in pots and ready for forcing may be obtained at any season from nurserymen. Their culture is extremely simple and no fruit is more delicious.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Seakale.—The foliage of Seakale having withered, crowns sufficient for requirements should be lifted for early forcing. Remove some of the smaller roots to enable the crowns to be packed fairly closely together in deep flower-pots, filling between them with light soil and afterwards watering them. The roots should be exposed to frost for a short time. They may be forced in the Mushroom-house or any other dark structure where a temperature of 55° to 60° may be maintained.

Celery.—Continue to earth up the latest batch of Celery as the plants need this attention. The earlier rows should receive the final earthing. Arrange the soil to a height just exceeding that of the lower leaves, carefully placing it around the plants by hand and taking care to prevent any reaching the centres of the plants. Select dry weather for doing this work, and finish by sloping the sides so that heavy rains may drain away. After the mild autumn, Celery foliage will quickly take harm from frost, therefore it will be advisable to have a supply of dried Bracken Fern or other light material at hand to use as a protective covering when needed. The leaf-mining maggot is unusually troublesome this autumn and the picking off and burning of the blistered portion of the leaves must not be neglected.

Celeriac.—Any roots of this vegetable remaining in the ground should be lifted at once and taken to the root store. After trimming off the top growth cover them with damp sand or ashes.

Late Cauliflowers.—Examine this crop frequently and, where the curds are showing, bend the leaves over the centres to protect them from being damaged by the weather. At the first indication of severe frost any plants approaching maturity should be lifted with plenty of soil attached to the roots, and heeled in in a cold frame or temporary structure that can be made frost-proof. When in position supply water to the roots; and, subsequently, others from the bed should be treated in the same way as they become fit. This will ensure the heads keeping in good condition for a long time, while, if left exposed, they would be spoiled by frost. Cauliflowers pricked off in cold frames, or potted, should have free ventilation whilst the weather remains mild to promote sturdy growth, but as frost may occur on any date now the lights should be replaced at nights.

Peas.—There are still some who advocate the sowing of Peas out of doors during the autumn and on light soils successful results are usually obtained. On heavy land the practice is not to be recommended as the plants seldom repay the trouble incurred in bringing them safely through the winter. Those who intend to grow Peas in this way should sow the seeds at the end of the present month, choosing a warm border for the seed bed. Only round-seeded varieties such as Bountiful and William 1st are suitable for the purpose; the Marrowfat types are likely to rot through excessive moisture. Sow the seeds in wide, shallow drills and cover them to a depth of one inch.

ORNAMENTAL DRACAENAS.

ALTHOUGH the generic name of *Dracaena* is applied to a large number of plants, chiefly grown for their ornamental foliage, most of them belong to the genus *Cordyline*. The best known species is *Cordyline australis*, frequently known, but erroneously, as *Dracaena indivisa*, the true *Cordyline indivisa* being quite different therefrom.

A native of New Zealand, *Cordyline australis* attains to tree-like dimensions, and large specimens are to be met with in the south-west of England and the Scilly Isles. The typical form, which may be readily raised from seeds, is in a small state largely used for decorative purposes. From its hardness and the firm texture of the leaves, it is a good room plant, and will withstand a dry atmosphere and cold draughts as well. There are some clearly marked varieties, including *Albentii*, illustrated in Fig. 100, the leaves of which are striped with white, and have a rose-coloured margin. Other distinct forms are *atropurpurea* or *lentiginosa*, the leaves of which are entirely of a reddish

In the seventies of the last century these *Cordylines* were in great demand, and many varieties were raised in this country. High prices were at that time obtained for new kinds. Most of the forms of *Cordyline terminalis* have the leaves varying in colour from creamy pink to deep red and crimson, through various intermediate shades. As might be supposed from their native habitat, these *Cordylines* are all more tender than *C. australis*, and for their successful culture they require the temperature of a stove. They are all readily increased when old tall plants are available, by cutting up the bare stems into lengths of about a couple of inches, and laying them in a bed of coconut fibre refuse, where there is a gentle bottom heat. They thrive in a mixture of loam, peat, and sand, but must not be over-potted, as the roots are not particularly vigorous.

These *Cordylines* need a fairly moist atmosphere, otherwise the leaves are apt to be attacked by thrips, which quickly disfigure them. They have long been grown for sale in Covent Garden Market, but are now, to a certain extent, under a cloud owing to the vagaries of fashion and even more to the fuel difficulty.

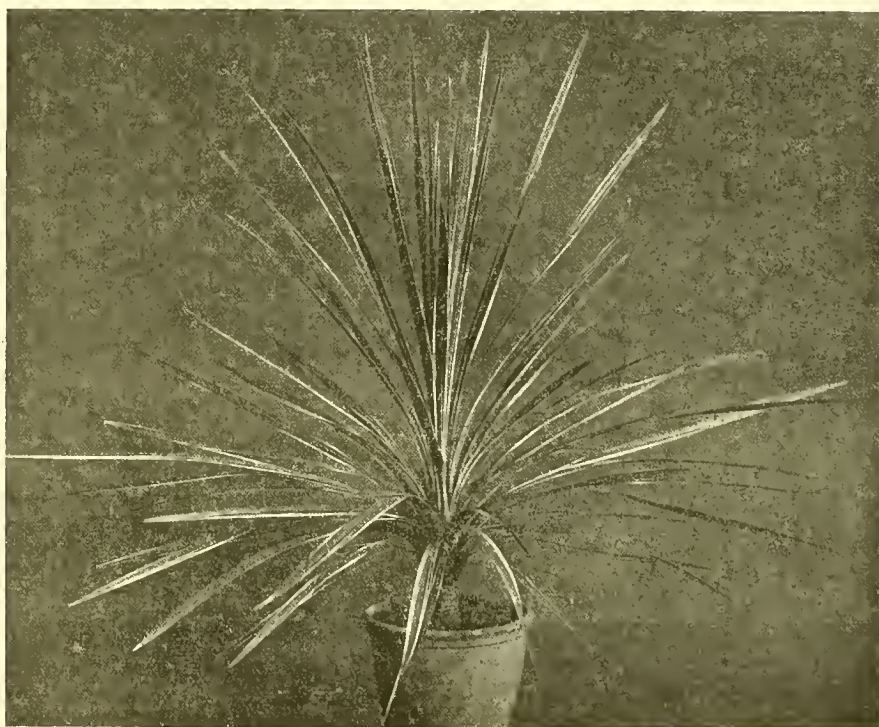


FIG. 100.—CORDYLINE (DRACAENA) AUSTRALIS VAR. ALBENTII.

brown tint; *Doucettii*, having leaves freely variegated with white; *lineata*, with unusually broad leaves; and *Veitchii*, with a distinctive bright red midrib.

The true *Cordyline indivisa*, also a native of New Zealand, is comparatively rare. It forms a noble specimen, being sturdier in growth, while the leaves are much broader, with the mid-rib and principal veins of a reddish tinge.

Other kinds that will thrive in a greenhouse are *Cordyline Brantii*, with medium sized deep green foliage; *C. Brantii variegata*, with golden variegated foliage; and *C. Eckhautei*, a species having long leaves disposed in a regular arching manner.

There are also in cultivation under the name of *Dracaena* a large number of varieties of *Cordyline terminalis*, itself a native of tropical Asia and some of the islands adjacent thereto. Many forms were introduced from fifty to sixty years ago and the different kinds rapidly became popular, for they appeared just at the time when line foliaged plants were in general request.

Of the true *Dracaenas* very great interest was centred in *D. Goldiana* when it first made its appearance and was given a First Class Certificate at the Royal Horticultural Society's meeting on June 4, 1873. From a commercial point of view it was a mistake to show it thus early, as it was not sent out till some years afterwards, and being frequently exhibited in the meantime, it was, when distributed, looked upon by many as far from a novelty. The firm leathery leaves of *D. Goldiana* are barred and marked with different shades of green, some being of a greyish hue, while the undersides are tinged with purple. It is a native of West Tropical Africa, as is also another species—*D. Godseffiana*, which, unlike the others, forms a freely branched bushy specimen with ovate leaves of a bright green tint freely spotted with creamy yellow. This *Dracaena* may be readily struck from cuttings. Though a native of the Tropics, I had this species in good condition as a room plant in London for three years, till an extra sharp winter proved fatal to it. W. T.

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ON SPOTTING IN APPLES.

DURING the past few years reports of "spotting" in Apples in this country have been increasingly frequent, and cultivators have made insistent enquiries as to the cause of the trouble and the remedies likely to prove serviceable in mitigating it.

Several instances are on record of the sudden



FIG. 101.—APPLE-ROT CAUSED BY *PLEOSPORA POMORUM*.

appearance and rapid development of "spotting" in store, causing disfigurement of the fruit and greatly prejudicing its sale. In some varieties the spots remain small, although they are frequently very numerous (as many as two hundred have been counted in individual specimens), but in others they grow large and the Apples affected decay early in the season.

"Spotting" has been reported from the counties of Berkshire, Cambridgeshire, Kent, Middlesex, Oxfordshire, Surrey, Sussex and Worcestershire, and appears to obtain generally throughout the Apple-growing districts. A similar disease, known as fruit spot, *Cylindrosporium* spot, etc., has been studied at several research centres in the United States.

"Spotting" is first observable in orchards towards the end of July and in early August. The spots, which are round or of a more irregular outline and are sometimes sunken, forming shallow pits, are usually scattered promiscuously over the surface of the Apple.

They vary in size from one-eighth of an inch to large blotches of irregular outline. In colour they are dark green on a green skin (Lord Derby, Newton Wonder); rose or purple on a green skin (Lane's Prince Albert); and brown of various shades (Ecklinville Seedling, Cox's Orange Pippin, Peasgood's Nonsuch, etc.). The brown spots are either plain or covered with black fibrous markings or black dots, due to the presence of the resting mycelium or resting bodies of fungous organisms.

The varieties affected are numerous, including many of the well-known culinary sorts, viz., Lane's Prince Albert, Dumelow's Seedling (syn. Wellington), Potts's Seedling, Newton Wonder, Bramley's Seedling, Ecklinville Seedling, and Peasgood's Nonsuch; and many notable dessert sorts, such as Cox's Orange Pippin and Allington Pippin.

The varieties which escape include hard-fleshed Apples, notably the russets (Christmas Pearmain, Worcester Pearmain, etc., with the exception of Hubbard's Pearmain); the late pippins (Allen's Everlasting—a seedling from Sturmer Pippin—Fearn's Pippin, etc.); also, so far as observations of 1917-18 show, certain other varieties with crisp, sub-acid flesh, such as Barnack Beauty, Gloria Mundi and Belle Dubois.

In America the fungous spotting is generally attributed to *Cylindrosporium pomi*, and it was at first thought that *Cylindrosporium* was responsible for the trouble in Britain. At the time of writing, however, this fungus has not been recorded here, but instead a species of *Pleospora*—*P. pomorum*, which is capable of acting as a causal organism—has been discovered and isolated from at least twenty varieties of Apple. Several varieties developed spotting as a result of artificial inoculation carried out on orchard Apples *in situ*. In at least three sorts—Allington Pippin, Rival and Wealthy—rotting ensued which was directly caused by *Pleospora pomorum*.

Pleospora pomorum is believed to be not the only fungus capable of causing "spotting." Several other fungi have been isolated, but their rôle has not yet been ascertained. These include two species of *Alternaria*, one of which—*A. grossulariae*, obtained from Ben's Red, Byford Wonder, Cox's Orange Pippin, Early Rivers, Grenadier, Rev. W. Wilks and September Beauty—is a Livonian species (see Jacewsky in *Bull. Soc. Myc. Fr.*, XXII., 1906, p. 122); the other—*A. pomicola*—has not been recorded hitherto. In America an *Alternaria* spot has been recorded in the Jonathan Apple (M. T. Cook and G. W. Martin in *Phytopathology*, I., 1911, p. 32), but some uncertainty prevails as to whether this fungus is causal or brings about merely an extension of spotting due to some unexplained cause.

Besides *Pleospora pomorum* and *Alternaria pomicola*, several other new fungi occur (see *Journal of Botany*, October, 1920), of which the most noteworthy is *Polyopeus purpureus*. This fungus has been obtained from at least twenty sorts and there is some probability of its functioning as a causal organism.

Leptosphaeria vagabunda, prevalent in America on twigs of different trees, and *Coryneum follicolum*, said to cause cankers on twigs and branches of American Apples, have also been obtained.

From the very frequent occurrence of spots at the lenticels, which in the Apple are usually of a simple nature, there is every probability that the infection by fungal organ-

isms takes place at the lenticel. Once the fungus obtains an entry it follows the course of the air spaces, congesting them and thereby hindering respiration. The tissue cells abutting on the infected air spaces are killed. The tissue turns brown, forming a small brown "pocket," similar to the internal "pits" present in Apples affected with bitter pit.

In bitter pit the spotting is usually internal and analogous to the markings found in Potatoes affected with internal disease or blotch; it is not caused by fungal organisms. In typical "spotting" the spots are external, and in early stages do not extend more than one-eighth of an inch inwards from the surface, and there are no internal spots. In cases, however, where the bitter pit spots exist immediately below the skin, a surface pitting almost indistinguishable from spotting of fungal origin is caused, and it is not unlikely that spots primarily of bitter pit origin are secondarily infected by fungi. Messrs. M. T. Cook and G. W. Martin consider the probability of the infection of such spots by *Alternaria* very great. Spotting due to both bitter pit and fungi is not infrequently present in the same Apple.

CONTROL.—1. Winter Spraying.—In the case

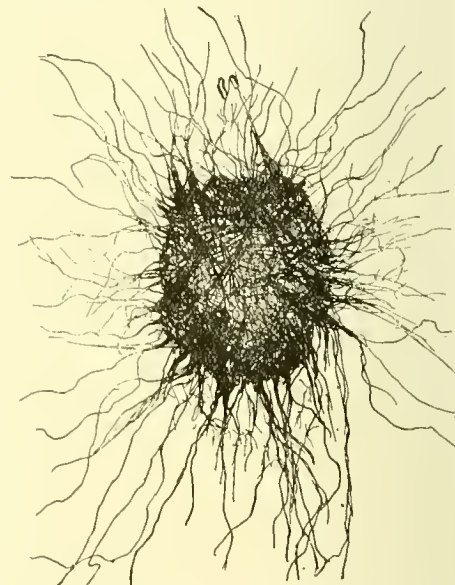


FIG. 102.—*ALTERNARIA POMICOLA*; "POCKETS" CONTAINING CONIDIA OF THE AERIAL TYPE.

of Peaches experimental sprayings carried out on a large scale in Australia, later confirmed by work in this country (A. S. Horne in *Jour. R.H.S.*, XLI., 1915, p. 110), has shown that a single spraying, using a one per cent Burgundy mixture, carried out before the buds unfold, will prevent the appearance of Peach-leaf curl caused by the fungus *Exoascus deformans*. It is supposed that the new spring growth arising from the winter form of this fungus is killed by the protective spray, and hence cannot reach the young foliage. Since some of the fungi concerned in "spotting"—and, indeed, most of those responsible for the rotting of Apples, notably *Sclerotinia fructigena*, *Glomerella cingulata* (Apple bitter rot) and *Physalospora cydoniae* (canker, leaf spot, rotting and "spotting")—exist on the body of the tree during winter and spread to the twigs and leaves and later to the fruit, it is desirable to spray the trees in winter, preferably towards the end of December.

2. Winter spraying of interplanted tree and bush fruits.—It is known that certain fungous organisms spread to the Apple from other host plants, for example the Gooseberry *Alternaria* (*Alternaria grossulariae*) from Gooseberries to Apples. Hence where Apples are interplanted with other fruit trees and bush fruit, growers would be well advised to winter-spray the whole plantation.

3. General sanitation.—The general sanitation of fruit farms and orchards should not be

the lip closely spotted and veined with claret colour. The broader proportions of *C. Doris* appears in the variety *roseum*.

AN ABNORMAL CYPRIPIEDIUM.

A FLOWER of a very beautiful hybrid *Cypripedium* with a remarkable abnormally developed lip is sent by Messrs. Jas. Cypher and Sons, Exotic Nurseries, Cheltenham. The broad upper sepal is white with a pale greenish-yellow base and prominent, raised purple

we have seen, the flowers having a diagonal width of seven inches, the four together making a stately display. The sepals and petals are clear buttercup-yellow, the large labellum claret-purple tinged with rose towards the margin and having cream-white lines at the base beneath the fleshy, white column.

CULTURAL MEMORANDA.

ANNUAL CARNATIONS.

ANNUAL Carnations which were transplanted in their flowering positions in May will pass out of bloom, with the first touch of frost, but if they are potted they will continue to flower throughout the winter under glass. Place a stick to each plant and tie each growth to it neatly and separately and give the roots a good soaking with water the night previous to lifting. Use similar soil for potting as they have been growing in during the summer; in a rich compost these Carnations invariably make good growth, but give very few flowers. The size of the pots should be determined by the amount of roots; the more compact the roots are the more bloom will the plants produce, and very large pots are not desirable. After potting, water the plants and shade them for a few days.

Grow them in a cool house throughout the winter, as little or no fire heat is required, except in very severe weather. The two best annual varieties with me are *Vanguard* and *Improved Marguerite*, which produces flowers equal to any tree Carnation I have seen, and also has one great advantage over most of the perpetual varieties, in that the blooms are sweetly scented. *H. Tullott*.

THE BULB GARDEN.

ROMULEAS.

Few people seem to know the *Romuleas*, little *Crocus*-like bulbous plants from southern lands which do not care much for the asperities of our more northern districts, but are happier in the south and flower more freely there. They bloom in spring, and the flowers are mostly of a delightful violet-blue or lilac colour. A good clump is very beautiful with its numerous *Crocus*-like flowers open to the sun and looking well with the grassy-leaves. The plant delights in dry soil and a sunny place, and in some gardens, such as my own,

neglected, since the fungi which cause disease in fruit trees are able to exist in dead wood and leaves, decaying fruit, cankered twigs and branches, and, indeed, in untreated wounds of various kinds.

4. Summer spraying.—Since "spotting" originates towards the end of July, a single spraying with a one-half per cent. Burgundy mixture, to take place during early July, should prove an effective direct method of preventing "spotting."

5. Insect control.—It is believed that the infection of Apples is brought about to a great extent through the agency of mites and other small insects. It is advisable, therefore, to keep insect pests well under control.

6. Store sanitation.—The store room should be systematically disinfected and fumigated with the object of killing the disease organisms and the insect carriers of disease germs already present in the store.

7. Cold storage.—Since the fungi concerned in "spotting" grow very slowly at low temperatures (0°C.—5°C.), some system of cold storage, combined with store sanitation is recommended. This is very necessary where Apples subject to "spotting" are stored after gathering from trees not previously sprayed. *A. S. Horne and E. V. Horne, Dept. of Plant Physiology and Pathology, Imperial College of Science and Technology.*

ORCHID NOTES AND GLEANINGS.

CYMBIDIUM ORION VAR. ROSEUM.

MR. W. E. WALKER, gardener to G. Hamilton Smith, Esq., Northside, Leigh Woods, Clifton, sends a fine rose-coloured form of the cross between *Cymbidium Doris* and *C. erythrostylum*, and remarks that although the batch has varied much in white and yellow tints, this is the first rose form. The sepals and petals are also striped with rosy-lilac, and

spotting, changing to rose towards the margin. The broad petals are yellow, tinged with rose and spotted with purple. The lip is fleshy in substance and produced inside out, the opening of the cup being beneath instead of above as in the normal form. The staminode is cleft and inverted, the anther being on the upper side. The lower sepals are enlarged and distinctly divided—whitish-green, spotted with purple. The abnormal character of the lip, which is pro-

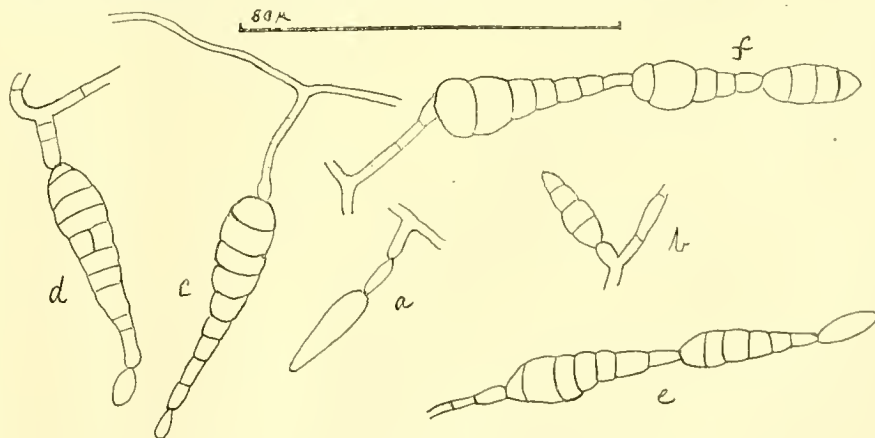


FIG. 104.—AERIAL CONIDIA OF *ALTERNARIA POMICOLA*; HIGHLY MAGNIFIED.

bably only temporary, detracts from the beauty of the flower, which, when perfect, would be a very showy hybrid. The parentage is not given.

LAELIO-CATTLEYA LUMINOSA SUPERBA.

A grand, four-flowered inflorescence of this showy cross between a yellow-petalled *Laelia tenebrosa* and *Cattleya Dowiana aurea* is sent by Messrs. Jas. Cypher and Sons, Cheltenham. It is the largest and brightest in colour of any

seems to be happier in a moraine than in a border or rock garden. I agree with Mr. Reginald Farrer in his opinion that *R. Bulbocodium* (not *bulbocorioides*, which is yellow and green) is the best. It is violet-blue, or bright lilac with a yellow throat. I have also grown *R. Columnae*, which has pale lilac flowers, and is not nearly so good; *R. Requeimii* and *R. caudata*. None of these appeals to me so much as *R. Bulbocodium*. *S. Arnott*.

FLORISTS' FLOWERS.

SELECTION OF THE BEST SWEET PEAS.

The Floral Committee of the National Sweet Pea Society gives the following varieties as an up-to-date selection. The asterisk indicates the variety which the Floral Committee consider the best in each of the colour classes. Two asterisks indicate a variety of special value for cultivation under glass.

Bicolor (light).—*Dora (A.M., 1915), Mrs. Cuthbertson and Sparkler.

Bicolor (dark).—*Adelaide and Marks Tey.

Blue (light).—Margaret Fife (A.M. 1915).

*Mrs. Tom Jones and Princess Mary.

Blue (dark).—*Commander Godsall, Jack Cornwell, V.C., and Lord Nelson Spencer.

Blush (pink).—Mrs. Hardcastle Sykes (A.M., 1905) and **Valentine.

Blush (lilac).—Agricola and *Elegance.

Carmine.—*John Ingman (F.C.C., 1904).

Cerise (pale).—**Doris, Hope and Mrs. G. W. Bishop.

Cerise (deep).—Brilliant, Fiery Cross (Silver Medal, 1915) and *Royal Salute.

Cerise (scarlet).—Alex Malcolm and **Royal Scot.

Cream, Buff and Ivory.—Cream (Dobbie's), **Felton's Cream and Ivoryine.

Cream Pink (pale).—*Mrs. A. Hitchcock and Giant Attraction.

Cream Pink (deep).—Edith Cavell, Market Pink and **Picture.

Crimson.—*Charity and Sunproof Crimson.

Fancy.—Prince George and **Magic.

Flushed.—Mrs. J. Balmer (rose on cream ground), *Mrs. J. T. Wakefield and Selina (deep rose on cream ground).

Lavender.—Austin Frederick, Gladys and **R. F. Felton (A.M., 1912; S.M., 1913).

Lavender (pale).—**Victory (Bolton's), (A.M., 1915), Lavender (King's) and Lavender (Unwin's).

Lilac.—Dorothy, Italia and **Mascotts Helio.

Marbled and Watered.—*Birdbrook, Helen Pierce Spencer and May Campbell (A.M., 1911).

Maroon (red).—Hawlmarm Maroon, Maroon (Dobbie's) and *Splendour.

Maroon (dark).—King Manoel and *Warrior. *Mauve*.—**King Mauve, Lady Eveline and Queen of Norway.

Orange.—Golden Glory, Orange (Dobbie's) and **Tangerine.

Orange (pink).—**Edrom Beauty, John Porter and King Alfred.

Orange (scarlet).—May Unwin, **The President and Thos. Stevenson (F.C.C., 1911).

Picottee Edged (cream ground).—Cherub, *Jean Ireland (F.C.C. 1915) and Mrs. C. W. Bredmore.

Picottee Edged (white ground).—*Annie Ireland and Elsie Herbert (A.M., 1906).

Pink (pale).—*Daisy Bud, Elfrida Pearson and Mavis.

Pink (deep).—**Hawlmarm Pink, Hebe and Pink (Unwin's).

Purple.—Le Mahdi, *Royal Purple (A.M., 1914) and Royalty.

Rose.—Old Rose, *Rosabelle and Verdun.

Salmon.—**Barbara (F.C.C., 1911), Liberty and Melba.

Salmon (pink).—**Lady Miller (A.M., 1912) and Surprise.

Scarlet.—**Hawlmarm Scarlet, Mascott's Scarlet and Scarlet (Dobbie's).

Striped and Flaked.—Loyalty, Phyllis and *Senator Spencer.

White.—**Edna May Improved, King White (A.M., 1912) and Nora Unwin.

White (tinted).—These are dark-seeded varieties. —*Constance Hinton and Miss Burnie.

SALVIA ULIGINOSA,

In the herbaceous ground at Kew a large plant of this Brazilian Sage has been in flower for fully three months. Growing five or six feet in height, it is freely clothed with rich, sky-blue flowers, elegantly disposed on twiggy stems. Its behaviour during this showery season suggests that the plant is a lover of moisture. A. O.

DEMONSTRATION PLOTS.*

It is always wise, when embarking on some new programme, to consider the methods adopted by other people, and to adopt some of those which have produced good results. For this purpose, we may rightly consider the progress made in Denmark with the advancement of certain agricultural crops. For instance, the returns of statistics for Denmark show that the increase in yield of Mangolds was raised from 16 tons per acre in 1895 to 21 tons per acre in 1913. In England the average has remained steady at about 18 tons per acre. With this increase in yield the acreage in Denmark has also increased from 95,000 acres to 678,000 acres, so that, relatively speaking, the increase is enormous. There does not appear to have been the same development with other root crops, such as Potatoes, Carrots, and Turnips. To take another instance, the yield of Wheat rose from 31 bushels per acre in 1879 to 43 bushels per acre in 1913, whereas the yield in England has remained at 31½ bushels per acre for many years. Other cereal crops in Denmark do not appear to have made the same progress.

In the production of grasses, the Danish records provide a fascinating study. From 1895 to 1906 the annual import of grass seed to Denmark was well in the neighbourhood of 9,000 tons, and when it is realised that the value of these seeds is somewhere in the neighbourhood of £2 per cwt., their financial importance to the country will be readily admitted. The total area devoted to the seed culture of grasses in Denmark in 1907 was only 10,000 acres, but by 1919 we find that 78,000 acres were devoted to this purpose, that it was no longer necessary to import any grass seed at all, and that a large export trade had been established. So seriously have the Danes taken up this matter that seed growers in this country are becoming alarmed for the home industry.

When we come to analyse the reasons for the development of certain agricultural crops in Denmark, we are struck by the fact that trials have been carried out for Wheat, and trials on an exceedingly large scale for both the Mangold crop and the Clover and grasses crops. Having experience of the trials carried out there, I have no hesitation in saying that the trials and Demonstration Plots have had an enormous influence on the development of these crops. Practically no trials have in the past been carried out there for Barleys, Oats, Turnips, Potatoes, and similar crops, and no development of these has been recorded. From such results it is safe to assume that the laying down of Demonstration Plots is a sound financial investment for any country.

THE METHOD OF TRIALS IN DENMARK.

It would be interesting to trace the way in which trials are carried out in Denmark, so that we can, to some extent, model our system on theirs, making certain modifications to meet our somewhat changed conditions. Denmark has six experimental stations which carry out a certain number of investigations of manuring, trials of varieties, and strains of each variety, to determine facts for demonstration throughout the country. As soon as the experimental stations have decided on these particular facts, attempts are made to bring them to public notice by establishing Demonstration Plots all over Denmark. These plots are really established by the Farmers' Associations themselves who, in every district, set up a Committee for the purpose. The Committee appoint a man to be responsible for the management of the plots, but the farmer provides the land and the labour. Half the expense is borne by the Farmers' Association, and the other half is paid by the State, and I think it reflects great credit on the Danish farmer that he helps directly with financial aid in this way. The increase in the number of these plots is shown in the following table:—

* An address delivered by Mr. H. V. Taylor, Deputy-Controller of Horticulture, at the Conference on Horticultural Education held at Wye College, September, 1920.

For the year 1895 there were	121	Plots.
" " " 1896 " " "	880	"
" " " 1901 " " "	4,390	"
" " " 1906 " " "	10,717	"
" " " 1913 " " "	12,234	"

The guiding principle underlying all these plots was that their intention was to serve merely as a guide to farmers, and they dealt with such subjects as the best mixture of manures, variety test of roots, Clovers, grasses and Wheat, to demonstrate the best kind of crop to grow in any district; and the way in which the farmers have derived knowledge, and put it into practice is demonstrated in the following way:—

At the time the trials were commenced some twenty or so varieties of Mangolds were grown in Denmark, some of which were exceedingly watery and poor in dry matter. These were reduced so that no more than five or six strains of Mangolds, all of which are exceedingly rich in dry matter, are cultivated throughout the whole of Denmark.

For manures, I can best indicate the influence of the trials as affecting the continued and increased use of artificial manures by the Danish farmer. During the year 1900, three million kroners worth of artificials were imported, and the amount had risen in 1914 to over 22 million kroners worth.

DEMONSTRATION PLOTS AT HOME.

A study of our conditions will show that we can proceed on somewhat similar lines. Research and investigation work in this country are carried out by Research Stations and the Provincial Colleges, and we have asked County Committees to set up Demonstration Plots which would demonstrate certain established principles and facts.

The first consideration in the establishing of such a plot is a suitable situation, from which it would follow that the plot must be right in the centre of the industry for the benefit of which the plot is to be established. If possible, the plot should be situated quite near the main road in order to draw the attention of passers-by, and as near to a railway station as possible. The land should be typical of that in the district.

Demonstration Plots would principally deal with two kinds of culture:—(1) Fruit Growing; (2) Vegetable Growing.

Both should demonstrate the importance of variety trials, showing the good points of new and improved varieties, and the bad points of other varieties, which even now are commonly grown. In fruit culture there is the necessity of demonstrating to fruit growers the influence of the stock on the scion which is grafted on to it. The subject is not fully understood even now, but from the result of Mr. Hatton's work we can safely say that certain stocks are more suitable for some varieties than others, and that some varieties would be of no economic importance if grafted on unsuitable stocks. Economic and improved methods of cultivation and the different systems of manuring must all receive attention, for it is quite apparent that much remains to be done in this connection. According to Bickham, we have to manure fruit trees after the crop has been gathered, to feed the fruit buds to produce a crop in the following year.

The Demonstration Plots must also show to growers the importance of adopting hygienic methods for controlling diseases and pests of many descriptions.

ACCOUNTS RESULTS OF 75 DANISH FARMS FOR THE YEAR 1916-1917.

Arca classes.	Number of farms.	Total capital per hectare.	Gross yield per hectare.	Working expenses per ha.	Net yield per hectare.	Yield per cent.
Under 20 hectares	16	Fr. 3489	1323	Fr. 1004	319	9.1
20-30 "	23	3428	1179	861	318	9.3
30-50 "	20	3303	1038	754	284	8.6
Over 50 "	16	3059	948	659	288	9.4
Totals and averages	75	3284	1082	777	304	9.3

WANTED, A HORTICULTURAL BOOK-SELLER.

EVER since I started collecting gardening and botanical books, I have realised what a great need there is in London for a really high-class new and second-hand bookshop where a speciality is made of botanical and horticultural works only. There are hundreds of booksellers in London to-day and hundreds more throughout the country, yet not one set up as a specialist in books for garden and flower lovers. I have searched London and many provincial towns and cities, but though I have found quite a number of booksellers who stock both new and second-hand books of the two kinds mentioned, they do not stock them to the exclusion of all else, and, incidentally, they always stock books that collectors like myself rarely require. But, surely, with the thousands of garden lovers now existing, some firm should cater for their needs. It is certainly time this was done.

Quite ordinary works out of print for a few years are exceedingly difficult to obtain. Take, for instance, Watson's *Cactus Culture*, published originally as 5s.; I had to advertise a dozen times before I could get a copy. In the case of Bunyard's *Fruit Garden*, I am advertising for the twenty-fourth time this week, and am almost in despair of ever seeing a copy, much less adding one to my library.

I certainly think there is an opportunity for someone to open a shop in London where one could always be certain of getting complete sets of such works as Wright's *Fruit Growers' Guide* (6 vols.), Lowe's *Ferns, British and Exotic* (8 vols.), complete bound sets of each of the chief gardening papers, and the *Journal of the Royal Horticultural Society*. Advertising for such works is a hopeless proceeding—I have tried it constantly and speak from bitter experience.

In the case of older works, collectors have colossal difficulties. Take, for instance, a book such as Hogg's *Fruit Manual*; I advertised for this twenty times without success, and when in Norwich recently I picked up a copy for 2s. when I would have willingly have paid £1 or more had this price been asked! In the case of Scott's *Orchardist* no fewer than sixteen advertisements were necessary before I secured a copy, while in the case of Twining's *Illustrations to the Natural Orders of Plants*—a two-volume work, with coloured plates—I had to advertise eight times before I obtained a suitable copy.

As a book collector, I strongly object to advertising my requirements, but if there is no bookseller with real knowledge of the value of horticultural works to do it for me, I have no choice. Everyone offers to advertise for me, of course, but after a few experiences like the following, I find I can do better by advertising myself:—

The first case was the well-known Nicholson's *Dictionary of Gardening*, long since out of print. I let some one advertise for this and he reported in due course "a fine copy in original binding, 20 guineas." This work is worth, at the very most, nine guineas a set, and copies can be had for less from time to time. The second one was Hulme's *Familiar Wild Flowers*, a work in several volumes, worth about 5s. 6d. a volume—postage, of course, extra. I have had this work offered to me several times by folks who have advertised for it for me, for 12s. and 15s. a volume! Much the same holds good for Cassell's *Popular Gardening*. Copies of this in the original binding were offered me at £6 the set of four volumes, when 30s. a set is considered very dear by those who know.

These few instances will serve to show that there is no place for a trader who does not know something of the real value of the horticultural and botanical books he wants to sell. But there is a place for an energetic man with a real knowledge of modern and the older horticultural books. He will make money; he cannot fail to do so, for collectors will hail his advent with acclamation. I hope I may live to meet such a man. He is sure of my custom, which I do not think he will despise. Collectors everywhere are waiting for such a one. *A Book Collector.*

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from page 207)

HEREFORDSHIRE.—We experienced general bad weather at blossoming time, and the fruit buds ripened badly last season, consequently the crops are poor. Plums had a severe attack of aphid, causing loss of much of such fruit as had set. With regard to this pest, I noted a considerable resistance in Jefferson; very bad effects on Gages and Damsons; and medium effects on Pershore Egg. Monilia (brown rot) is very prevalent on Plum trees. Anthracosis is very prevalent on Apples; we had a bad set of these fruits from weather causes, and further loss from aphid attack. White mildew was also bad. Pears set badly. There is not very much midge, but a good deal of Venturia and leaf blister mite. Red Currants were a moderate crop. Black Currants (free from big bud) fair. Gooseberries were moderate to fair (not very much sawfly, but more *Abraaxus grossulariæ* attack than usual). Raspberries and Loganberries fair; the former suffered through poor cane growth of last year.—*H. E. Durham, Hereford.*

Apple trees were badly attacked by aphid and cast a good deal of crop in consequence. Pears are a very light crop, but the fruit is clean and good. Plums are healthy and the trees clean. Strawberries gave promise of a full crop but the wet weather spoilt them. Apples cropping best are Adams' Pearmain, Wealthy, Lord Grosvenor, Seaton House, Tyler's Kernel, Peasgood's Nonsuch, Lane's Prince Albert, Stirling Castle, Golden Spire, Frogmore Prolific, Charles Ross, Loddington and Warner's King. The following varieties of Plums gave good crops:—Victoria, Mitchelson's, Monarch, Pershore, Jefferson, Denniston's Superb, Guthrie's Late Green Gage, Bryanston Green Gage, Pond's Seedling and Belgian Purple. The soil is a red, sandy loam.—*Thomas Spencer, Goodrich Court, Ross.*

(To be continued.)

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Rural Education.—Some time ago Sir Alfred Davies kindly sent me a copy of the Report of an Experiment in Rural Secondary Education at Welshpool County School for Boys. In an introduction Sir Alfred says: "It is claimed that the experiment proved that a strong bias towards the industries of the neighbourhood of the school and a thoroughly efficient course of general education are not only consistent with, but helpful to, each other. . . . It was felt that Intermediate Schools in Wales, whether situated in country districts or in seaports, in mining or in manufacturing districts, tended to become schools of one pattern only, and the Board were glad to assist an experiment in adapting the school curriculum to the surroundings within which the boys lived." I am sure such a course can be made of the utmost value to the nation as a whole, especially now that boys are required to remain at school till they are sixteen years of age. From thirteen to sixteen years of age all boys should be helped by their training to fill the sphere in life they are likely to occupy. In the immediate past things have been too often arranged as if all boys were going up to a university. It is only the "lads o' pairs" that should be so encouraged; all the others would be infinitely happier working with their hands. In this connection I quote what Professor Wallace, of Edinburgh University, said in opening his class of Agriculture and Rural Economy. He declared "that the strenuous opposition to recent educational legislation which had developed among educational authorities, and the absence of evidence of educational progress in spite of an enormously increased expenditure, had fully justified his declared opposition to the system of education which neglected the practical side of a child's

development, and failed to fit the individual for the business of life." He reasserted that for 85 per cent. of the population the business of life involves hand labour, and that the successful school system of the future must include manual training, which had hitherto been ignored in favour of an abortive attempt to monopolise on literary lines. "Only limited numbers of children were capable of taking advantage of their educational opportunities, and the time was spent by the others mainly in trifling and putting in time doing nothing." The enormous success of handicraft in wood and the Boy Scout movement were striking, if limited, examples of the success of the system that he advocated, which included the occupation of all healthy children deficient in literary capacity, for a few hours daily, in the commercial work of the country, under a well-conceived and well-regulated method of paid employment. He declared that "the conspicuous merit which ordinary useful work has over all spurious imitations was seen in the human interest engendered and the educational and healthful effect which it produced." In the Welshpool School, where half of the boys are sons of farmers, it was right that a rural bias should be the bias adopted, and at first the instruction consisted mainly of specially useful and applied points in Agricultural Chemistry, with farm visits for observation of crops, etc. A school garden was also established. Botany was introduced, and elementary biology later, and the claim is made that the introduction of the rural trend in the various subjects of the curriculum has not interfered in the least with the success, examination or intrinsic, of pupils of the more academic type in the school. This is proved by the results in recent years of the Higher Certificate and other examinations. We want to get back, if we can, to the ideals which were held of old, when the labour of one's hands was looked on with pride and pleasure, and such educational schemes as have been adopted at Welshpool are steps in the right direction, and ought to meet with support and encouragement from all in public life. *W. Cuthbertson.*

Potato Arran Comrade.—Amongst new varieties of Potatoes Arran Comrade is of distinctly good promise as a second early or mid-season variety. In a very light soil the haulm grew about 18 in. high and was quite bushy, or spreading, thus covering the ground. The tubers were of good average size, round and white with shallow eyes. The flesh is white, mealy and of good flavour. The resultant crop was at the rate of 13 tons 5 cwt. 80 lb. to the acre, but doubtless this would be much higher in good soil and under fuller exposure, for it was shaded all the afternoon by a tall and strong growing variety alongside of it. As this variety is immune to wart disease it will help to make up for the lack of immune, heavy-bearing, early sorts. *J. F.*

White Fly on Tomatoes.—The pest has increased during the past twelve months, and in many cases threatens to prevent the cultivation of Tomatoes. Cyaniding is a good remedy where it can be adopted, but the market grower who has an acre or more of Tomatoes in glass houses is in many instances prevented from cyaniding effectually, owing to leakage where houses are out of repair, and the danger of placing cyanide in the hands of ordinary workers. I have lately had to make inquiries about this crop in Surrey, and was pleased to find one large grower—Mr. W. Moon, Chesington Nurseries, Surbiton—had found it possible to control this pest by spraying; a Belgian friend recommended him to try an insecticide called Flora, which has been imported and successfully used in Belgium. This is sprayed over the plants, from planting time, at regular intervals of one month, at a strength of 1 part in 100 parts of soft water. The results in Mr. Moon's case were quite successful; his plants were all carrying good, clean crops when I saw them a short time ago, and were quite different to those of last season, when they were badly attacked by white fly. *W. H. Diers, V.M.H.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

OCTOBER 5.—*Present*: Messrs. E. A. Bowles, M.A. (in the chair), Hales, Odell, W. G. Baker, Cuthbertson, Fraser, Worsley and Chittenden (hon. sec.).

Eleutherococcus Henryi.—Mr. R. C. NOTCUTT sent fruiting branches of this interesting Chinese Araliad from his nursery at Woodbridge.

Various plants.—Mr. ELWES showed flowering plants of *Caliphuria subdentata* for comparison with the supposed hybrid *Ureocharis Clibranii*, to which it bears a great resemblance; *Rhynchanthera latifolia*; *Hedychium yunnanense* (a very sweet scented species); *H. Greenii*, which is identical with *H. Elwesii*; and *Tricyrtis subhirtella*.

Germination of Lonicera Hildebrandtii.—Mr. SIDNEY MORRIS had been experimenting with seed of *Lonicera Hildebrandtii* with the following results:—

Dates of sowing *Lonicera Hildebrandtii*.—First sowing, December 17, 1919, in sandy loam, in heat (12 seeds); no germination.

Second sowing, December 29, 1919, similar compost, but under cooler conditions (12 seeds); no germination.

Third sowing, January 14, 1920; the seeds were sown with the pulp attached, in heat, in similar compost (12 seeds); the seeds were noticed to decay much quicker; no germination.

Fourth sowing, January 20, 1920; the seeds were exposed for a short period after being removed from the ovary, and placed in propagating frames (12 seeds); no germination.

Fifth sowing, February 10, 1920; the seeds were cleaned, taken from the plant in November, 1919, and kept in store till sowing time; they were very much shrivelled, and sown in pure sand (12 seeds); no germination.

Sixth sowing, February 25, 1920; the seeds were taken from the plant at pruning time, when the capsules were very dry; sown in brisk heat, by placing the seed pan on the hot-water pipes; no germination.

Seventh sowing, September 16, 1920 (12 seeds); the seeds were from this season's crop, taken from the plant, cleaned and sown the same day in sandy loam, and placed in heat; on the fourth day one radicle was ascending; five others appeared above the soil on September 29, 1920; five germinated on September 29, 1920.

Eighth sowing, September 25, 1920 (20 seeds); this sowing was made direct from the plant, placed in heat, and seeds are now germinating (October 3, 1920). These two last sowings were of green seeds removed from the capsule.

WEST MIDLANDS COMMERCIAL FRUIT SHOW.

THE keen interest in fruit growing, which has been so pronouncedly expressed since 1911, may be seen reflected in the various fruit exhibitions which have been and are being held in various parts of the country. It is not surprising that Kent holds a fruit show, considering the importance of the industry in that county, but the Eastern Counties, and now the West Midlands, also have their county fruit exhibitions and displays. That of the West Midlands Association took place at Worcester on the 12th, 13th and 14th inst.

It is fitting that Worcester should be selected as the first place for the holding of this show, for it was from this city that Apple Worcester Pearmain was distributed, in 1873, by the late firm of Richard Smith and Co., who are reported to have paid 20s. each for five grafts for what was said to be a seedling from Devonshire Quarrenden.

Despite a bad fruit year, it is not to be wondered at that under the enthusiastic and

capable management of such an executive as Mr. F. Paget Norbury (the chairman of the Association), Mr. A. Whiting (whose father, the late Mr. R. A. Whiting, used to put up such magnificent exhibitions from Dargate, Faversham, at the R.I.S. Fruit Show), and Mr. R. C. Gant (agricultural organiser and advisor for Worcestershire), that on this occasion a grand lot of fruit was forthcoming.

In the words of Mr. F. Paget Norbury, they "have in Worcestershire an Apple which will export as well as, if not better, than any foreign Apple sent to England," and, of course, the statement is no mere expression of opinion, as for some years Worcester Pearmain has been sent from this country to various parts of the world, and although Great Britain has not yet a surplus supply of Apples to export in quantity to such countries as South America, and even Australia and New Zealand, which, although Apple-producing countries, have their seasons when Apples are unobtainable, fruits would be very acceptable there if available at a reasonable price.

What the English grower is only just commencing to grasp, however, is the need for better packing and the standardising of style of packages. It is only the hard-fleshed, thick-skinned type of Apple, such as Worcester Pearmain, which will stand the rough handling accorded by pickers and packers in this country.

The schedule was mostly restricted to commercial growers, yet no private grower could visit the show without being impressed by the varieties exhibited. Instead of on plates, the fruit was mostly displayed in boxes, tubs and baskets, ready for market. The Committee is fortunate in having secured a number of cups and special prizes for competition.

In judging fruit exhibits, the following points were awarded: Size, 25; colour, 15; condition, 20; uniformity of grading, 10; quality of pack, 20; general appearance, 10.

Lord Coventry, in performing the opening ceremony at noon on the 12th inst., referred to the splendid show brought together in a year notorious for a poor crop of fruit. The only Plum which had done well in his district was the Pershore Plum, which belonged to Worcestershire. The exhibition was of educational value in showing how fruit should be packed, and neither growers nor salesmen should grudge the trifling extra cost of packing material, for this matter had a greater influence on the returns than many imagined. He was informed that in Worcestershire since 1912 there had been an increase of 500 acres devoted to fruit culture.

After the opening ceremony, a large party proceeded to the Masonic Hall to lunch. Mr. J. W. Willis Bund, Worcester C.C., presiding.

Not the least interesting portion of the show were the exhibits of the East Malling Experimental Station, showing the various root systems of Apple stocks, which so clearly demonstrate the importance of having Apples on the best varieties of Paradise (Dwarfing) stocks, in order to secure not only precocity in fruiting but also a longer life in Apples on such stocks, for important as it is to secure a good dwarfing stock, unless the trees are only required as "fillers" for temporary work while large standards on free stock are developing, orchards may be planted which die out prematurely.

Long Ashton Research Station had many illustrations of Black Currant reversion, and the Ministry of Agriculture and Fisheries examples of Potato diseases, fruit pests, etc.

The Nicholls' Challenge Cup, valued at £100, was offered by Messrs. Francis Nicholls and Co., Smithfield Market, Birmingham, for the best two exhibits by the same exhibitor, one of dessert, the other of culinary Apples. The cup was won by Messrs. GILBERT POW AND HARDING, of Newent, for a grand lot of Worcester Pearmain, but it was difficult to say which of their culinary varieties—Bramley's Seedling or Newton Wonder—was

superior, so fine were the examples of both sorts.

In all some nine special cups, valued at £250, in addition to £250 in cash prizes, were awarded.

The winners in the various classes were as follow, the prizes being 1st £3, 2nd £2, 3rd £1 respectively:—Two boxes of *Cox's Orange Pippin*: 1st, Mr. F. P. NORBURY, Sherridge, near Malvern; 2nd, Mr. H. BARTON, Hollesley Bay Labour Colony, Suffolk; 3rd, Mr. H. A. WHIPPEN, Hownall, Ross.

Six boxes of *Worcester Pearmain*: 1, Mr. P. NORBURY; 2nd, Mr. H. BARTON; 3rd, Mr. H. S. BICKHAM, Hilltop Fruit Farm, Ledbury.

Six boxes of *any other dessert Apple*: 1st, Mr. H. BARTON, with Jas. Grieve (packed upright); 2nd, Mr. F. P. NORBURY, with Jas. Grieve (packed flat); 3rd, Mr. NORBURY, Allington Pippin.

Other varieties shown in this class were Court Pendu Plat and Chas. Ross.

One box of *Cox's Orange Pippin*: 1st, Mr. H. A. WHIPPEN, Hownall, near Ross; 2nd, Mr. J. W. WRIGHT, Caradoc Fruit Farm, Ross; 3rd, Messrs. GILBERT POW AND HARDING, Glenbeth Fruit Farm, Newent.

Three boxes of *Worcester Pearmain*: 1st, Mr. A. L. GWILLIM, Swainshill, near Hereford; 2nd, Messrs. GILBERT POW AND HARDING; 3rd, Mr. H. G. THEYEN, Drockmoor, Winchcombe, Glos.

Three boxes of *Jas. Grieve*: 1st, Messrs. McDONNELL BROS., LTD., Norrest, Malvern.

Three boxes of *Blenheim Pippin*: 1st, Mr. H. S. BICKHAM; 2nd, Mr. B. BOMFORD, Harrington Lodge, Evesham.

Three boxes of *Dessert Apples* (Cox's Orange Pippin, Blenheim Pippin, Worcester Pearmain and James Grieve excluded): 1st, Messrs. WHITE AND HALL, Harrington, Evesham, with King of the Pippins; 2nd, Messrs. GILBERT POW AND HARDING, with Allington Pippin; 3rd, Messrs. T. and M. DIXON, Tardebigge, Bromsgrove, with Chas. Ross; highly commended, Mr. H. S. BICKHAM, with King of the Pippins.

Three boxes of *Pears*: Mr. B. BOMFORD won all three prizes with Fertility (very fine sample), a fine Beurré variety (which no one could name), and Catiline respectively.

A new *dessert Apple*, introduced since 1900, season January, or later: A second prize was awarded to the only competitor for Corona tion. This was one of the few weak classes, and adverse comments were passed on Corona tion being classed as "new."

Three bushels of *cooking Apples*: 1st, Messrs. WHITE AND HALL, Hampton, Evesham, with Lane's Prince Albert; 2nd, Mr. GEO. JACKSON, Glewstone Fruit Plantation, Ross, with Lane's Prince Albert; 3rd, Mr. A. L. GWILLIM, with Stirling Castle.

Classes 13, 14, 15, 16, 17 were for similar varieties in half-bushel and barrels. The following were the prize-winners (1st prize £4, 2nd £3, 3rd £2):—

Six half-barrels of *Bramley's Seedling*: 1st, Mr. H. BARTON; 2nd, Mr. H. W. TRAVELL; 3rd, Mr. F. P. NORBURY.

Six half-barrels of *Newton Wonder*: 1st, Mr. F. P. NORBURY; 2nd, Mr. H. G. THEYEN; 3rd, Messrs. T. and M. DIXON.

Six half-barrels of *Lane's Prince Albert*: 1st, Mr. E. B. CHAMPERNOONE, Park Fruit Farm, Truro; 2nd, Mr. F. P. NORBURY; 3rd, Mr. GEO. JACKSON.

Classes 21, 22, 23, 24, 25 were for similar varieties in three half-barrels; 1st prize £3, 2nd £2, 3rd £1.

An *Association Exhibit*, for prizes of £5, £3 and £2 respectively: 1st, EVESHAM MARKET GARDENERS AND FRUIT GROWERS, two bushels each Bramley's Seedling, Lord Derby, Lane's Prince Albert, King of the Pippins; 2nd, PERSHORE FRUIT GROWERS, two boxes each of Worcester Pearmain, James Grieve, two barrels of Newton Wonder, Lane's Prince Albert, Bramley's Seedling, Lord Derby; 3rd, NATIONAL FARMERS' UNION (Kidderminster Branch), two boxes each of King of the Pippins.

Newton Wonder, Stirling Castle, Warner's King, Bramley's Seedling, Pitmaston Duchess. There were also classes for bottled fruit, and for fruit growers' sundries, competitions for fruit packing, etc.

Among non-competitive exhibits were to be noted three seedling Apples from Mr. F. STEVENS, Sidmouth—Lloyd George, a large late-keeping variety, a cross between King's Acre Pippin and Bramley's Seedling, said to be good for either kitchen or dessert in March; Walbrook Pippin, a late-keeping seedling from Cox's Orange Pippin; and Guinea Gold, a flattish, yellow variety, of no apparent merit. Mr. E. J. PARSONS, Nurseries, Worcester, had a fine lot of Apples in which his new varieties, Queen Mary and Madresfield Court, were prominent. While the former is somewhat like American Mother in appearance, Mr. Wm. Crump was heard to say that he had known the Apple from its origin, being a seedling from Jas. Grieve and Wm. Crump. Madresfield Court is more in the way of Ribston Pippin in flavour, but a better grower. Messrs. SEABROOK, of Chelmsford, also had a non-competitive exhibit, in which the variety Monarch, like a large Dumelow's Seedling (Wellington), and Excelsior, an early dessert variety in the way of Lady Sudeley, were prominent.

On the second day there were two conferences of fruit growers, at 11 and 2 o'clock, which were addressed by Mr. W. J. Lobjoit, Controller of Horticulture, and Mr. E. L. Vinden. Demonstrations in Fruit Bottling were given each evening at 6.30. The fruit was disposed of by auction on the third day of the show.

KENT COMMERCIAL FRUIT SHOW.

OCTOBER 26, 27 AND 28.—Notwithstanding the shortage of Apples this season there was a very fine display of packed fruit at the Agricultural Hall, Maidstone, on the above dates on the occasion of the annual Kent Commercial Fruit Show. This exhibition is held for the purpose of encouraging first-class packing and grading, and incidentally, first-class cultivation, and to show the public that British growers can grow, pack and grade fruit as well as growers in other parts of the world. An inspection of the exhibits served to show that the majority of competitors have little to learn, consequently the rank and file who do not exhibit should be encouraged to do so, or, at least, to improve their methods.

The Kent show is under very able management, and Mr. M. T. R. Dunstan, of Wye College, is the chairman of an influential committee composed chiefly of growers, while Mr. W. Miskin, of Wye College, is the secretary, with Mr. G. Maltby, of the Fruit Research Station, Malling, assistant secretary.

The official luncheon was presided over by F. S. W. Cornwallis, Esq., Linton, Maidstone, one of the vice-presidents, and there were present at this function Mr. W. Lobjoit (Controller of Horticulture), Mr. W. Poupert, Mr. A. H. Pearson, Mr. F. R. Ridley (Master of the Fruiterers' Company), and many other important horticulturists. In proposing success to the Kent Commercial Fruit Show, Mr. Lobjoit said that there would always be rivalry between home-grown and imported Apples, a rivalry bound to be intensified as time proceeds. He considered that the home product did not enjoy the privileges it should receive from nearness to markets; but it should be remembered that imported Apples had to overcome the handicap of distance from market. It was the desire of the Horticulture section of the Ministry of Agriculture to encourage production and improved methods of marketing, but there was no desire on the part of the Ministry to impose its will in this direction. He pointed out, however, that the chief matters needing consideration were—(1) a standardised package; (2) reliability of sample, with honest and regular packing; and (3) continuity of supply, which meant concentration upon the cultivation of a comparatively few approved varieties. Mr. Lobjoit urged that the whole-

sale and retail distributors, as well as growers, should be brought together by the Chamber of Horticulture and come to an agreement as regards a standard package, standards of grading and methods of packing. He thought the Ministry of Agriculture might help in the matter by providing an official label to be issued to all growers' associations whose members agreed to certain conditions. The issue of such a label should be limited to approved varieties and to certain standards of quality and package. In the label, with its Government stamp, name of the association, variety of fruit, grade and quantity of contents, and, possibly, the name of the grower, buyers would have a guarantee as to the quality of the contents of each package. He suggested that the various associations should consider the use of such a label as well as such questions as cancellation of the label, how to deal with complaints, and arbitration. He concluded by suggesting that if the trade could not reach an agreement on this point, in face of the acknowledged evils existing, the Ministry of Agriculture would seek powers to enforce conditions for the protection of British fruit. Mr. Lobjoit was accorded a very hearty reception and listened to with keen interest, and although no expression of opinion regarding his suggestions was made at the luncheon, the matters were freely discussed in an informal manner by those who attended the exhibition.

CULINARY APPLES IN BOXES.

The best six boxes of Newton Wonder Apples contained large, highly-coloured fruits, exhibited by Mr. W. L. HUBBLE, Faversham, a 3-2 pack; 2nd, Mr. H. G. THAYER, Winchcombe, Gloucester; 3rd, Mr. G. R. BLIGH, Benenden. Nine entries. Mr. BLIGH won the chief award for six boxes of Lane's Prince Albert, with a fine sample of large, bright specimens; 2nd Mr. G. A. ADDY, Ightham, for slightly smaller fruits; 3rd HOLLESLEY BAY LABOUR COLONY. Seven entries. Blenheim Pippin was well shown, and on the whole the fruits were brightly coloured. There were seven entries. Lt.-Col. BORTON, Cheveney, Yalding, won first prize with six boxes of capitally packed and finely selected fruits; 2nd, Mr. E. DAY; 3rd, Mr. SELBY-SMITH, Barming.

The Walter Voss Silver Cup, offered for the best packed dozen boxes of any cooking Apple, was awarded to Sir W. W. BERRY, Faversham (who also won a Champion Bowl), for splendid specimens of Bramley's Seedling, a two by two pack, with the fruits upright; 2nd, HOLLESLEY BAY LABOUR COLONY, with Bramley's Seedling. This was a fine class and made a grand display.

Mr. F. NEAME won the Silver Cup offered by *The Fruit Grower* for the best packed three boxes, showing Bismarek; 2nd, Mr. M. CROSSEY, Harrietsham, with Bramley's Seedling; 3rd, Mr. HUBBLE.

DESSERT APPLES IN BOXES.

The awards in the class for three boxes of Allington Pippins were difficult to understand in the case of the first and second prizes. HOLLESLEY BAY LABOUR COLONY gained first prize for well-packed but comparatively small samples; Mr. BLIGH 2nd, for clean, brilliant, fair-sized fruits; 3rd, Mr. F. P. NORBURY. Several boxes of very large fruits were passed over, no doubt because of their large size.

There were only four entries of three boxes of Cox's Orange Pippin, and awards were made in the following order:—HOLLESLEY BAY LABOUR COLONY; Mr. H. L. ROBSON, Guildford; and Mr. E. BLIGH.—For three boxes of any other dessert Apple, Mr. H. M. COBB, Rochester, was placed first for Charles Ross; 2nd, Mr. W. HUBBLE, for King of the Pippins; 3rd, Mr. RONSON, for Worcester Pearmain.

Mr. F. M. COBB won the Silver Cup offered by Messrs. Geo. Monro, Ltd., for the best-packed dozen boxes of any dessert Apple, with somewhat large, slightly shrivelled examples of Allington Pippin; 2nd, HOLLESLEY BAY LABOUR COLONY, with Allington Pippin.

For one box of any dessert Apple Mr. H. L. ROBSON led with Cox's Orange Pippin; 2nd, Mr. J. WEEKS; 3rd, Mr. L. GREEN. Laxton's Superb Apple was prominent in the class for a new dessert Apple, shown in a box, but no award card was attached to show what prize was awarded.

Mr. F. NEAME showed the best three boxes of Pears—Doyenné du Comice; he also showed three splendid boxes of Catillac in this class.

APPLES IN HALF-BARRELS.

A new feature was the presentation of Apples packed in half-barrels, or Grape barrels, and this proved most interesting. The barrels had their consignment labels and weights on them. The award was for the best six half-barrels, and Mr. W. HUBBLE won 1st prize with grand samples of Bramley's Seedling, with scarcely a bruise on the lot; 2nd, Mr. E. DAY; 3rd, Mr. F. NEAME. The best six half-barrels of Red Bramley's came from Mr. J. KITCHEN, Sandway, Kent; 2nd, Mr. E. BLIGH—all finely-coloured fruits.

Of six half-barrels of Lord Derby there were six sets, and the best were from Mr. C. S. SMITH, Boughton Monchelsea, Maidstone, who had wonderful fruits, well packed; 2nd, Mr. F. M. CROSSEY; 3rd, Mr. W. HUBBLE.

A class was provided for the best three half-barrels of "a cooking Apple in season," and here the chief award was made in favour of THE HOLLESLEY BAY LABOUR COLONY, who showed Mère de Ménage in fine condition—but surely the season of this Apple is much later! Mr. E. DAY 2nd with Bismarek; Lt.-Col. BORTON 3rd, with Golden Noble.

Mr. F. CHEESMAN, Mereworth, showed the best half-barrel of Bramley's Seedling, and won therewith the Silver Medal of the Fruiterers' Company for the best exhibit in classes 15, 16, 17 and 18; 2nd, Mr. G. ADDY. Mr. J. WICKS led for a half-barrel of Lord Derby; while for any other cooking Apple Mr. L. GREEN, Sutton, Valence, excelled; Mr. J. WICKS 2nd; and Mr. G. ADDY 3rd.

APPLES IN BARRELS.

First prize for four 3-bushel barrels of any cooking Apple was won by Mr. H. M. COBB, who was also awarded Messrs. Clarke Bros. Challenge Cup and Mr. B. Emmanuel's Champion Cup for their grand exhibit of Bramley's Seedling—wonderful fruits; HOLLESLEY BAY LABOUR COLONY 2nd; Mr. S. SMITH 3rd.

NON-COMPETITIVE.

There were numerous non-competitive exhibits, including one from the Ministry of Agriculture showing various diseases of fruits and Potatoes, samples of Potatoes immune to wart disease, and a selection of the Ministry's leaflets. From the East Malling Fruit Research Station came specimens of a great variety of stocks suitable and unsuitable for fruit trees, together with photographs of the effect of good and bad stocks. Apples were also shown to demonstrate the effects of spraying in the prevention of scab. Exhibits of spraying fluids and spraying machines were numerous, and the exhibitors included Messrs. E. A. White, Ltd., Messrs. McDougall Bros., Ltd., Messrs. W. Cooper and Nephews, Mr. E. R. Bugge, Messrs. Haynes Bros., the Yalding Manufacturing Co., Ltd., Messrs. Renny Forbes and Co., Mr. J. L. Edginton, Messrs. Lewis Berger and Co., Messrs. Walter Voss and Co., Messrs. Drake and Fletcher, and Messrs. W. J. Craven and Co.

Messrs. W. Seabrook and Sons, Chelmsford, showed baskets and exhibits of excellent fruits of their new Excelsior (dessert) and Monarch (culinary) Apples, besides Rival, Cox's Orange Pippin, Peasgood's Nonsuch, Allington Pippin, Lane's Prince Albert, Bismarek, and Bramley's Seedling Apples. Messrs. G. Bunyard and Co., Maidstone, exhibited spray fluids and spraying machines, and baskets of fine fruits of Lord Derby, Mère de Ménage, Bramley's Seedling, Newton Wonder, Blenheim Pippin and Bismarek Apples.

TRADE NOTES.

WITH reference to our note on the Thames Lock Gardens (see p. 187), Messrs. Sutton and Sons inform us that they had the pleasure of supplying the seeds distributed to the fifty-eight lock-keepers.

A MEETING of the Council of the Chamber of Horticulture was held on Wednesday, 20th October, 1920, at 18, Bedford Square. Among those present were: Messrs. Geo. Monro (president), in the chair, J. S. Brunton, C. H. Curtis, H. G. Mount, R. H. Page, F. R. Ridley, Joseph Rochford, W. E. Wallace, and the secretary.

It was agreed that the proposed rules of the International Bureau for the registration of new plants should be circulated amongst all societies likely to be interested, whether affiliated or not, and that, if necessary, a conference of representatives of these societies should be held in order to arrive at a mutual agreement.

It was agreed that the proper procedure in connection with the matter of overlapping at conferences was to call together representatives of the affiliated societies to consider the proposals already considered by the Chamber and the Horticultural Trades' Association, and the Secretary was instructed to make arrangements accordingly and to invite Mr. Lobjoit to preside. It was agreed that the Chamber's representatives be those who acted on the previous occasion, namely, Messrs. Monro, Rochford, Shawyer and W. H. Page and the secretary.

The chairman read a letter received from the Controller of Horticulture requesting the Chamber to nominate a representative to serve on the Basket Making Industry Committee, and it was agreed that Mr. A. T. Barnes, of Messrs. Geo. Monro, Ltd., be asked to act.

A letter was received from the Controller of Horticulture requesting the Chamber, in consultation with the National Farmers' Union, the Federation of British Growers, and the Horticultural Trades' Association, to suggest the names of six persons to serve on this Council. After considerable discussion, it was agreed that a conference constituted as follows be arranged:—Chamber of Horticulture, 6 representatives; National Farmers' Union, 3 representatives; Federation of British Growers, 3 representatives; Worthing Growers' Association, 3 representatives; Lea Valley Growers' Association, 3 representatives; Horticultural Trades' Association, 3 representatives; British Florists' Federation, 3 representatives. The chair to be taken by Mr. Geo. Monro.

Mr. Brunton raised the question of the Chamber's relations with its affiliated bodies, and expressed the opinion that the Central body should be kept directly informed of any action taken or resolution passed by affiliated societies, which might in any way affect the work of the Chamber, and that in return copies of reports of meetings and other information should be circulated amongst affiliated societies. It was decided that this point should be dealt with at the Conference of Societies already referred to.

INQUIRIES.

ROSES FOR HEDGES.

I DESIRE the names of Roses which will stand being cut like a Privet-hedge, and yet not be entirely deprived of blossom. I know Sweetbriar hedges may be trimmed closely, but what I need is a Rose or Roses which would form a hedge, 5 ft. or 6 ft. high, to hide a blank wall, against which nothing may be planted. Mr. Robinson mentions Rose hedges in *The Flower Garden*, but gives no names of desirable kinds. R. V. H.

CAN any reader give me information regarding Strawberry Sturton Cross, and also the source from which runners can be obtained? J. K. R.

CAN any reader inform me where I can procure Italian Oil Jars for garden decoration.—G. C.

ANSWERS TO CORRESPONDENTS.

A GARDENER'S NOTICE: R. E. It is customary for a head gardener to give or receive a month's notice when terminating an engagement, and in the case of under gardeners a week's notice. According to an article written by a solicitor in *Gard. Chron.*, March 22, 1919, there has been no decision of the question in the High Court of Justice to make case-law which would be binding in the country generally. In view of this, decisions vary in different parts of the country according to local custom. In all such cases it is advisable to consult a local solicitor.

GLORY PEA. J. W. This is the common name applied to *Clanthus Dampieri*, a Leguminous plant from Australia and New South Wales. It produces red flowers with a dark purple blotch on each, and is somewhat difficult to cultivate successfully. The plants are herbaceous and perennial, and if planted out-of-doors, should be grown in sandy soil, in the warmest position possible.

GRAPES DISEASED: E. D. The berries are affected with spot disease caused by the fungus, *Gloeosporium ampelophagum*. See reply to S.E.A., *Gard. Chron.*, October 2, 1920.

GRUBS IN SOIL: A. M. S. The grubs are those of the Crane fly or Daddy Long Legs, and are known as Leather Jackets. The Leather Jacket is very destructive to garden crops and should be trapped by pieces of such vegetables as Carrots and Turnips placed below the surface of the soil. The Crane fly usually lays its eggs in grass land and seldom does so in cultivated soil; therefore, when all the grubs have hatched into perfect insects, you are not likely to be further troubled with this pest.

HORTICULTURAL BOOKS: R. E. We think your best plan would be to advertise all your books at one time and state that the best offers for each or all of them, received by a certain date, will be accepted.

IRIS DISEASED: A. W. The plants are affected with a bacterial disease; the soft parts are swarming with bacteria. It is possibly the same trouble as that caused on the Continent by *Bacillus omnivorus*.

LANDLORD'S RIGHT TO PLANTS: K. L. In the case of a private tenant of a house and garden (as distinguished from a nurseryman or market gardener), whatever is planted by him in the soil becomes part of the freehold, and accordingly, belongs to the landlord. This is clearly established in the case of all plants and shrubs. As to your rockery, although structures resting merely by their own weight on the surface of the ground do not become landlord's fixtures, the court would probably hold that a rockery sunk in the ground, and at least partially covered by soil and plants, is sufficiently in the soil to be regarded as a landlord's fixture.

LEVELLING GROUND: H. P. N. It is not necessary that the pegs should be placed equal distances apart, but may be put in at any angle and according to the length of the rod used. Your calculations in the tables sent appear to be accurate.

MICE AND BULBS: P. R. The mice you refer to are probably voles, which have a great difficulty in finding food in winter, and will attack bulbs and other vegetation during times of scarcity. One of the simplest plans is to coat the bulbs with red-lead, as in the case of Peas. It is also claimed that powdered glass and such things as fine cinders will act as deterrents to these pests, but your best plan would be to trap them. Either the ordinary break-back traps or such simple ones as those made with a flower pot or jam jar may be used. If a

flower pot is employed the hole should be stopped with clay and the pot more than half filled with water, smearing the rim inside with a thick coating of grease. Another form of water trap is made with a large tin sunk into the soil level with the surface. A roller is attached across the middle by driving a long wire nail in each end, so that it will revolve easily. In the centre of the roller a bait, such as a string of Peas, is placed; the mice will be easily precipitated into the water when they attempt to reach the Peas.

NAMES OF FRUITS: Jack. A very fine specimen of Lane's Prince Albert.—J. C. S. 1, Cox's Pomona; 2, Lord Derby; 3, Keswick Codlin; 4, Small's Admirable; 5, Winter Russet; 6, d'Arcy Spice; 7, King of the Pippins; 8, Alfriston; 9, Mère de Ménage.—M. M. 1, Ribston Pippin; 2, Newton Wonder; 3, Fearn's Pippin; 4, Sturmer Pippin.—F. D. W.: Cox's Orange Pippin. Herham; 1, Alfriston; 2, Ashmead's Kernel; 3, Newton Wonder; 4, Norfolk Stone Pippin; 5, Ord's Apple; 6, Old Hawthornden.—C. E. D.: 1, Lodgemore Nonpareil; 2, Blenheim Pippin; 3 (Pear), Catillac; 4, Golden Noble; 5, Ringer; 6, Cellini; 7, d'Arcy Spice.

NAMES OF PLANTS: I. R. *Crataegus coccinea*.—W. R. P. *Cimicifuga racemosa*.—A. W. 1, *Bocconia cordata*; 2, a variety of *Michaelmas Daisy*; 3, *Solidago canadensis*; 4, *Veronica gentianoides*; 5, *Chrysanthemum uliginosum*; 6, *Eupatorium ageratoides*; 7, *Eupatorium purpureum*; 8, a small pompon *Chrysanthemum*, variety not recognised.—A. B. We cannot undertake to name florists' varieties of flowers. The colours of the Carnations are by no means uncommon. J. A. L. H. *Pyrus terminalis*.—J. S. C.—1, *Rhus cctinus*; 2, *Spiraea Anthony Waterer*; 3, *S. Douglasii*; 4, *Soirea Thunbergi*; 5, *Deutzia crenata*.—H. M. *Coriaria terminalis*.—B. M. 1, *Coriaria terminalis*; 2, *Picea excelsa* var. *inverta*; 3, *Picea excelsa* var. *monstrosa*.—Cestrian. *Grindelia glutinosa*.—A. W. N. *Begonia coccinea*, introduced from Brazil in 1841: a very fine species, which deserves to be more generally cultivated.

SAXIFRAGA "MISS WILLMOTT": E. B. A. It is probable that *Saxifraga Miss Willmott* is one of the many seedlings in the production of which several kinds like *S. decipiens* and *S. granulata* have played a part.

THE BLUE PIMPERNEL.—J. B.: The Blue Pimpernel, *Anagallis coerulea*, Schreber, has been recorded in 48 out of the 112 counties and vice-counties of Great Britain. It is met with here and there, but usually as scattered plants. The two most closely allied British plants are *A. arvensis* and *A. coerulea*. The former has, as a rule, scarlet flowers, and the lobes of the corolla are very finely notched with very short glandular hairs all round the margin. The plants spread along the ground, unless they are quite young. *A. coerulea* makes an upright, branching little bush; the leaves are narrower than those of the other species, and the lobes of the corolla are more deeply toothed or notched, but they have no glandular hairs. By comparing your plant with the more common *A. arvensis*, you will see whether you have the right plant, for some botanists consider that both vary with scarlet or blue flowers.

TURFING A LAWN: A. R. The turves will keep in good condition from two to four weeks after they are cut, provided they are protected from driving winds with mats or other covering. The grass may look a little yellow when the turves are laid, but it will soon recover its former green appearance.

Communications received.—W. R. P.—H. G. S., Llandudno.—M. S.—E. D.—A. J.—A. G. G.—G. S. H. J., Bedford, Cape Town.—J. C. C.—J. B.—J. B. C.—C. W.—C. B.—A. G.—A. E.—S. F. B.—T. A.—R. P. B.—T. H.—J. P.—E. M.—A. G.—F. K.—H. C. P.—M. P. A.—C. T.—J. F.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.2°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, November 3, 10 a.m.: Bar, 29.65, temp. 43°. Weather—Fine.

sprays should be given at fortnightly intervals, but it is inadvisable to spray during a period of drought. Another mode of applying sulphate of iron as a weed killer is practised by not a few keepers of golf greens with markedly successful results. It consists of mixing sulphate of iron with sulphate of ammonia, together with coarse sand (lawn sand) or sterilised dry soil, and broadcasting the mixture over the grass. The ingredients may be mixed in the proportion of 1 part of sulphate of iron, 1 part of sulphate of ammonia, and 2 parts of sand, and 4 oz. of the mixture may be applied to each square yard. Daisies, no less than Dandelions, succumb to this treatment, which may be practised either in autumn or spring. The sulphate of ammonia, of course, exercises a beneficial fertilising effect in addition to its weed killing action. Needless to say, a Dandelion infested lawn must receive supplementary treatment or else bare patches left after the weed killer has done its work would make it unsightly. Probably the best treatment consists in a liberal autumn application of well-rotted manure, but those who for one reason or another prefer to use artificial manures, may apply a dressing of bone meal, say 8 cwt. to the acre. Dandelions are, however, intrusive things, and a lawn, if it is to be kept free of them, may have to be treated every second or third year; probably, however, if once it is cleared by spraying all that will be necessary for a long time to come, will be local applications of the dry mixture.

Opening of a New Dundee Park.—Mrs. Marryatt, sister of the generous benefactor to whom the citizens of Dundee owe their new park opened it formally on October 27, in the presence of a large number of spectators. The park, which is called the Caird Park, in memory of the late Sir James Caird, Bart., through whose munificent bequest it has been provided, occupies a fine position, and includes in its boundaries the popular resort of the Den of Mains and Mains Castle. In addition to other forms of recreation for which facilities are to be provided there will be a golf course. After the formal opening Mrs. Marryatt planted a commemorative tree.

Cancellation of the Manchester Chrysanthemum Show.—Owing to the coal strike and the uncertainty of its duration, the Council of the Royal Botanical and Horticultural Society of Manchester have reluctantly decided to cancel their show arranged for November 18 and 19.

Citrus Fruit Culture for Queensland Settlers.—There is probably no district in the world that can produce the Orange, Citron, Lime, Mandarin, Cummquat, Shaddock, Lisbon Lemon, and Bengal Lemon to a greater perfection or with less trouble than the Citrus belt of Queensland. The average production of Citrus fruits per tree materially varies, according to soil, climate, treatment of trees, prevalence of insect and fungous pests, and also to the age of the trees. Some trees will return a crop worth £5 each season; others, bearing for the first time, from 5s. to 103s. per tree, so that it is customary to reckon upon an average of £1 per tree per annum. This means that the owner of from 500 to 1,000 trees gets a gross income of from £500 to £1,000 per annum, five or six years after clearing and planting his land. In the very early days of Orange-growing trees were raised from seed, but all trees planted during late years are of the best kinds and grafted.

The National Union of Horticultural Workers.—Mr. C. Harding informs us that the National Union of Horticultural Workers, of which he is Secretary, has opened within the past fortnight new branches at Bovey Tracey, Dawlish, Paignton, Handsworth, King's Heath, Harborne and Stretchley. The policy of the Union in endeavouring to obtain concessions for its members by conciliatory methods is meeting with much success. Efforts are being made by the

Union to get employers of private gardeners to organise Residents' Associations throughout the country for the purpose of collective bargaining.

The Origin of the Cultivated Pear.—Monsieur A. Chevalier, the well-known French oenologist and explorer, has just published* an interesting article on the origin of the perry-Pears cultivated in Normandy and Brittany. Until the last century, all Pears were classed under the one species, *Malus communis*, Lamk., but M. Chevalier holds that this species should be divided into four elementary types, which have hybridised, and their progeny may be looked upon as the starting points of all the cultivated varieties. These four elementary species are *Malus acerba*, Méral, *M. dasphylla*, Borkh., *M. praecox*, Borkh., and *M. prunifolia*, Borkh. *Malus acerba*, which is found wild in the forests almost all over Europe, is not cultivated, but is frequently used as stock. It yields very poor perry, and yet it would appear to have been the only species used for this purpose up to the eleventh century. About this time and for long afterwards, grafts of superior perry-Pears were brought from the north of Spain (Biscay) to Normandy and Brittany. These were of the species *M. dasphylla*, native of Armenia and of Turkestan, and cultivated there from very early times; the species was also grown over the whole of the Mediterranean region and in Spain. It is very polymorphous, represented by numerous forms; among others, the curious *Malus Niedzwetskyana*. *Malus praecox* is derived from the south of Russia and from Asia Minor; it would appear to have been imported into Europe at the time of the Crusades. It is the Pear Paradise, used as stock to obtain trees of dwarf growth. In conclusion, *Malus prunifolia* originates in Central Asia, and is widely cultivated in Russia. From the hybridisation of these four species and their various forms arise, according to M. Chevalier, all the forms of Pears cultivated in Europe for their fruits. His article is an interesting contribution to the study of one of our fruit trees of which the origin is perhaps the most obscure.

The Flowering Plants of South Africa.—This is the title of a new magazine prepared on very similar lines to the *Botanical Magazine*, in which will be illustrated and described flowering plants indigenous to South Africa. The first part of Volume I., dated November, 1920, deals with ten plants, the illustrations being reproduced from drawings by Miss K. A. Lansdell, and the descriptions by Dr. E. Percy Phillips, botanist in charge of the National Herbarium, South Africa. The work is edited by Mr. I. B. Pole Evans, M.A., D.Sc., who in his preface notice states that "the publication of the present volume has only been made possible through the interest and keenness of a South African lady, whose love for her country and natural beauty has been the means of procuring the necessary funds for the initiation of the work." It is proposed to issue the work every three months at an annual subscription of 60s., or 15s. each part containing ten coloured plates; the printers are Messrs. L. Reeve and Co., Ltd., 6, Henrietta Street, London. The following is a list of the plants dealt with in part one:—*Agapanthus umbellatus*, *Aloe globuligemma*, *Arctotis Fosteri*, *Cyrtanthus contractus*, *Gerbera Jamesoni*, *Gladiolus psittacinus* var. *Cooperi*, *Leucadendron Stokoei* ♂, *Leucadendron Stokoei* ♀, *Tulbaghia violacea* and *Richardia angustiloba*. It will be noticed that several of these South African plants are valuable garden subjects. *Richardia angustiloba* (tab. 10) is the one generally cultivated in this country as *R. Pentlandii*, or the Yellow Arum. It is interesting to know that the blue *Agapanthus* (tab. 1) was introduced into this country so far back as 1692. *Arctotis Fosteri* (tab. 3) is a new species raised from seed received from Mr. C. Foster, of Clanwilliam, in 1916, in the Garden of the Division of Botany, Pretoria. This handsome Composite has the

* *Spraying Lawns with Iron Sulphate to Eradicate Dandelions*. M. T. Munn. New York Agricultural Experimental Station, Bulletin 466, Geneva, N.Y.

* *Comptes-rendus*. Académie des Sciences, September 13, 1920.

appearance of a good garden plant, and Mr. E. Phillips in his descriptions states:—"The large size of the flower-head and the delicate colouring of the rays make it worthy of a place in all South African gardens." The ray florets are of a delicate pink shade above and eugenia red to dykde red beneath, and an orange zone surrounds the darker coloured disc. *Cyrtanthus contractus* (tab. 4) is another new plant that is very handsome. The inflorescence is a four to ten-flowered umbel, bearing pendulous, scarlet-red flowers that are faintly scented. The blossoms are tubular in shape, and some two to three inches long.

The Fruit, Flower, and Vegetable Distributive Trade.—A special order has been signed under Seal of the Minister of Labour, applying the Trade Boards Acts, 1909 and 1918, to the fruit, flower, and vegetable distributive trade; that is to say, the wholesale and retail sale of commodities specified in the schedule to the Order, and certain subsidiary operations also specified in the appendix to the Order, copies of which may be obtained on application to the Secretary, Ministry of Labour, Montagu House, Whitehall, S.W.1, or to the Secretary, Ministry of Labour, Irish Department, Lord Edward Street, Dublin.—It is proposed to establish separate Trade Boards for this trade in England and Wales, Scotland and Ireland.

The Ailanthus.—Some interesting information on *Ailanthus altissima*, better known as *Ailanthus glandulosa*, is given in the *Bulletin of Popular Information* for October 18, 1920, issued by the Arnold Arboretum, U.S.A. The writer considers this plant one of the handsomest and most valuable trees in the world, and that, planted in cities, it can resist better than any other tree, heat, drought, dust and gas escaping from defective pipes which menace the life of street trees. Moreover it grows rapidly, even in the most unpromising situations, is never seriously injured by insects, and may be propagated with ease, for small pieces of the root covered with soil soon develop into specimens large enough for transplanting. It is remarkable that the *Ailanthus* is very seldom used in this country as a street tree; in America it is stated that there is no better tree than *Ailanthus* to shade the streets of cities provided there is ample room for full development of the plant. In addition to all this value, the wood is of use for the making of furniture, and supplies to the cabinet maker timber which in quality and beauty equals that of the White Oak, Black Walnut and Wild Cherry. The home of the tree is China, but it has never been discovered wild by any of the European or American botanists who have visited the celestial Empire. It is interesting to learn that the popularity of the *Ailanthus* as a street tree in the United States has declined, owing to the strong odour of the flowers, which some consider offensive, and the abundance of pollen, which, falling on roofs, renders rain water caught on them unfit for use. There are two other species, *Ailanthus glandulosa* and *A. Vilmosiana*, the former having prickles on the branches and the latter with a downy covering on the branchlets.

Coconut Cultivation in America.—The Coconut is one of the most valuable trees of tropical countries and the number of useful materials which it furnishes includes the oil which is extracted from the flesh—known as copra, and used in the making of soaps and candles, and butter and lard substitutes; and the copra refuse, which makes valuable food for cattle and poultry. The fresh nut is used in confectionery and pastry; the fibres are made into rope, matting and brushes; the refuse of the fibre is valuable for packing and garden purposes, whilst the leaves, wood, shells, etc., are put to various uses. The scarcity of butter has given a great impetus to the production of copra, and the cultivation of Coconuts in tropical America, although small compared with that of the Far East, shows a considerable increase during the past few years. The British Government has encouraged Coconut cultivation in the West Indies. During 1917, Trinidad exported

17,355,712 nuts valued at £93,000, and during the same year the exports of copra produced outside the island, chiefly in Venezuela, amounted to 7,201,448 lb., valued at £107,000. In Tobago, which is about one fourth the size of Trinidad, about 9,000 acres are planted with Coconuts. Jamaica in 1917 exported no fewer than 27,000,000 Coconuts, and Cuba exported 3,398,000 nuts and 5,432 kilos of copra in the same year. Many other places in tropical America, including Porto Rico, Haiti, Panama, Honduras, Costa Rica and Nicaragua, also show a steady increase in the area devoted to the cultivation of this valuable Palm.

New Assistant Director of Glasgow Public Parks.—Mr. E. Matthews, whose portrait we reproduce, has taken up his duties as Assistant Director of Public Parks, Gardens and Open Spaces under the Corporation of the City of Glasgow, to which he was appointed some time since. He is a son of Mr. R. Matthews, Duncrub Park, Dunning, and, electing to follow his father's profession, was apprenticed at Duncrub. He gained further knowledge and experience in such well-known places as Hopetoun, Linlithgow; Gosford House, Haddington; Castle



MR. E. MATTHEWS; THE NEW ASSISTANT DIRECTOR OF THE GLASGOW PUBLIC PARKS AND GARDENS.

Wemyss, Renfrew; and Castlemilk, Dumfries. Thereafter he was appointed gardener to G. Craig Sellar, Esq., Arntornish, Argyll, and during his term of office was responsible for the laying out of the garden and grounds. In 1914 Mr. Matthews was appointed gardener at Newstead Abbey, Notts, the beautiful home of Lord Byron, but the owner died the following year, when he went to Strathfieldsaye, Berkshire, as gardener to the Duke of Wellington. Mr. Matthews was, for a number of years, a prominent prize-winner at the R.H.S. vegetable and fruit shows, as well as at provincial exhibitions. In the spring of this year he became gardener-bailiff to the Dowager Countess of Wilton at Lanwades, and was shortly afterwards appointed to his new post at Glasgow.

Carriage of Pot Plants by Passenger Train.—As a result of continuous representations made by the British Florists' Federation, plants in pots will now be accepted for conveyance by passenger train, at the low rates, at King's Cross and St. Pancras Stations. It is of interest to note that these representations placed the B.F.F. in a position to obtain the earliest information concerning the difficulties—now happily settled—which arose in connection with the pot plant traffic.

White Clover Seed.—The Ministry of Agriculture draws the attention of farmers to the value of growing White Clover for seed, as the demand greatly exceeds the supply and can be indefinitely extended. Nearly any soil in this country is suitable for the profitable cultivation of White Clover, and in the case of strong land, the application of either basic slag or super-

phosphate has a greatly stimulating effect on the plants; on light soil potash should be added to the phosphatic manure. In Kent the average yield of seed is 50 lb. per acre, and in Gloucestershire 30-40 lb. per acre, but much higher yields are sometimes obtained.

Flowers in Season.—Mr. Charles Turner, Royal Nurseries, Slough, has forwarded blooms of three beautiful Dahlias, which are not only of decorative garden value, but very charming as cut blooms, as they possess long, wiry stems. Two of the varieties are of the Cactus type, viz., Border King, of a fine scarlet colour and with long twisted florets, and Edith Carter, which is yellow, suffused with carmine. The other, René Cayeux, is of crimson-scarlet colour and belongs to the decorative section.

Appointments for the Ensuing Week.—Monday, November 8: United Horticultural, Benefit and Provident Society's Committee meets. Tuesday, November 9: Gloucestershire Root, Fruit and Grain Society's Show; National Potato Exhibition at Bingley Hall, Birmingham (three days); Birmingham Chrysanthemum Show (three days). Wednesday, November 10: West of England Chrysanthemum Society's Show at Plymouth (two days). Thursday, November 11: Finchley Chrysanthemum Society's Show; Hitchin Chrysanthemum Society's Show. Friday, November 12: Sheffield Chrysanthemum Society's Show (two days); Bradford Chrysanthemum Exhibition, in the Queen's Hall, Bradford.

"Gardeners' Chronicle" Seventy-five Years Ago.—The late Mr. J. C. Loudon.—Among the labourers in the cause of social improvement, one of the most remarkable men was the late Mr. Loudon; a person who succeeded in accomplishing more, under severe personal disadvantages, than others could effect with all the aid of robust health and an advantageous position in the world. Our opinion as to the general importance of his works has already been repeatedly expressed, and time in no degree alters the view that we have taken. He had his faults, like other men; his writings cannot be regarded as of a high order, they are sometimes disfigured by an enthusiasm which runs into extravagance; and they often bear marks of their author not being equal to the subjects which he undertook to deal with. But, notwithstanding these blemishes, they will always be consulted for their utility, and esteemed for their honest purpose. If Mr. Loudon had no original discoveries to rest upon, he had, what was in its way of no small value, unwearying energy, considerable tact, and a thorough knowledge of the wants of the peculiar class for which he wrote. This arose from his having himself been one of that class; from his remarking the difficulties he had himself experienced in his early career, and from his applying all the force of his character to removing them out of the way of others. While yet quite a child, he was sent to live with an uncle in Edinburgh, that he might attend the classes at the public schools. Here he overcame his dislike to Latin, and made extraordinary progress in drawing and arithmetic. He also attended classes of botany and chemistry, making copious notes, illustrated with very clever pen-and-ink sketches. Still he could not make up his mind to learn French, till one day, when he was about 14, his uncle, showing a fine French engraving to a friend, asked his nephew to translate the title. This he could not do; and the deep shame and mortification which he felt, and which he never afterwards forgot, made him determined to acquire the language. Pride, however, and love of independence, which was ever one of his strongest feelings, prevented him from applying to his father to defray the expense; and he actually paid his master himself, by the sale of a translation which he afterwards made for the editor of a periodical then publishing in Edinburgh. He subsequently studied Italian, and paid his master in the same manner. He also kept a journal from the time he was 13, and continued it for nearly 30 years, writing it for many years in French, in order to familiarise himself with the language.—*Gard. Chron.*, November 8, 1845.

NEW AND NOTEWORTHY PLANTS.

MAGNOLIA WILSONII.

In *Magnolia Wilsonii*, introduced by Mr. E. H. Wilson from China in 1904, we have a most valuable addition to a genus which has been aptly termed the Royal Family among hardy trees and shrubs. Mr. Wilson collected seeds of this new species in Western Szechuan in woods and thickets at an altitude of 7,000 to 8,500 feet. As the flowering season is during the second half of May and early June, the blossoms are not likely to be damaged by spring frosts. In habit it is a large shrub, more elegant and twiggy in growth than most *Magnolias*. In shape and size the pure white flowers somewhat resemble those of *M. parviflora*. They are deliciously fragrant and have conspicuous red stamens. The blossoms are freely produced and generally drooping. At Kew, in Cornwall and probably elsewhere fruits ripened during August of this year. Seeds sown as soon as they were ripe have already germinated, consequently there should soon be a good stock of plants in the country without resorting to grafting. A. O.

WILD FLOWERS IN SOUTH AFRICA.

At many of the local flower shows in England one or more classes for wild flowers are provided, but as so little interest is taken in them it will be difficult for British readers to imagine an exhibition devoted entirely to wild flowers, such as was held at Caledon, Cape Province, South Africa, on September 18, when the Society for the Protection of Wild Flowers held its annual show.

The flowers displayed were wonderfully beautiful and represented a large number of species representing many natural orders. Heaths provided the chief attraction, and as there are about 500 species of *Ericas* in South Africa, many of them extremely beautiful, it is difficult to understand why so few are cultivated in the homeland. *Erica campanulata*, with bright yellow flowers, each $\frac{1}{2}$ in. long, is particularly fine, and as it has a light, branching habit it is very graceful. *E. ardens* (?) with roundish, waxy-white flowers; *E. dulcea*, pink and white; *E. blenna*, orange and green (extra large flowers); *E. regia*, bright red and white; *E. vestita*, pink; *E. Bowieana*, white; *E. Monsoniana*, white; and *E. abietana*, bright yellow, were a few of the more striking species exhibited. A new species of *Erica* was forthcoming on this occasion. It is somewhat similar to *E. dulcea*, but, as these have been found for the first time in the province, it has not yet been named.

Near the Heaths were the no less glorious Painted Ladies (*Gladiolus* species). The fine blooms were shown to great advantage and the range of colouring exhibited proved most attractive. While these wild flowers cannot be compared with the cultivated *Gladioli* they are nevertheless very beautiful. The collections of Sugar Bush (*Protea* species) proved most attractive, as the interesting flowers varied from 2 in. to 9 in. in diameter and were mostly cream colour, or rose and silver. One species, the king of all, had a huge, black-centred bloom, with the outer part creamy-white and deep pink. In addition, the natural orders, Orchidaceae, Liliaceae and Iridaceae were finely represented, many of the Orchids carrying spikes 14 in. high.

There were classes for groups, bowls, vases, bouquets and table decorations of wild flowers, for collections of Painted Ladies, Ixias, *Africanders* (*Antholyzas*), Chinkerichies (*Ornithogalum thyrsoides*), Everlastings (*Helichrysum*), and Noon flowers (*Mossambryanthemum*), of which there are about 300 species in South Africa, varying greatly in size and colouring. These Noon flowers in pink, red, yellow, cream, orange and magenta provided a brilliant display, but to see them at their best one must explore the mountain stream sides or the apparently parched veldt. *Lachenalias*, *Sparaxis*,

Watsonias, *Arums* and *Freesias* were also well represented.

The whole country produces a wealth of beautiful flowers more or less all the year round, on the veldt, in the crannies and corners of rocks, by the sides of mountain streams, in fact, almost everywhere. Instead of odd specimens, or even dozens, there are hundreds and thousands of every sort in huge patches; indeed, so glorious are the pictures Nature produces here that one is led to believe that South Africa is the home of the goddess Flora. During the second week in August, Signal Hill was covered with a little *Marguerite*, which grows about 6 in. high, and when the sun was shining (and it usually is shining in South Africa) the whole hillside looked like a huge mass of burnished silver. At the present time (the end

thanks to the work of the Society, such flowers are protected by law, and it is a criminal offence to destroy roots or flowers of certain species which were formerly threatened with extinction. The Society for the Protection of Wild Flowers holds three exhibitions each year, the first at Caledon, about the middle of September; the second at Tulbagh, at the end of September; and the third at Cape Town, early in October. The dates may appear somewhat close together, but the three districts are a considerable distance apart. These exhibitions were instituted for the purpose of bringing before the public the different species of plants that were protected or needed protection so that all might help in the duty of preserving the extensive flora of this most wonderful country. A. G. King, *Thornebrae Gardens, Cape Town*.



FIG. 105.—CHRYSANthemum BLANCHE DE POITEN (see p. 183.)

R.H.S. Award of Merit, October 5, 1920.

of September) wherever one goes, Callas are to be found in the hedgerows, among the rocks of the foothills, by the mountain streams, and even on the Flats. The flowers are large, even in this district, which is supposed to be a dry one, but I am told they grow much larger on the mainland in the moisture areas, but even so, those near us would delight the heart of any florist. *Freesias* have flowered remarkably well this spring, but one must see them growing in huge patches on the mountain side to fully appreciate their grace and beauty.

A few years ago some South African flowers were gradually being exterminated, especially the rarer and more beautiful kinds, but now,

[By a coincidence, we received by the same mail that brought Mr. King's letter, a box of Chinkerichies from Mr. H. J. Bedford, nurseryman, of Claremont, Cape Colony. The inflorescences were quite undeveloped and represented short spikes with large bracts subtending the undeveloped flowers. After a short period in water, in a warm, light room, the blossoms commenced to expand and, at the time of writing, many of the flowers are fully opened. The longevity of these flowers is remarkable. They will probably continue fresh for several weeks or even months. According to *The Flora of South Africa*, the Chinkerichie is also known as Star of Bethlehem, and viooltje.—Eps.]

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Planting Fruit Trees.—The planting of all kinds of fruit trees should be commenced forthwith, whenever the soil is in a suitable condition. Although fruit trees may be planted from November to March, November planting is much to be preferred. On heavy soil it is advisable to plant the roots practically on the ground level, covering with a slight mound of soil, which will ensure them being above the general soil level and out of the reach of stagnant moisture. Where the soil is of a porous nature, it is desirable to plant in a slight depression. Spread the roots carefully and cover them with fine soil, keeping the more fibrous ones near the surface. Any roots that have been damaged in lifting should be cut clean in an upward direction to favour the development of new roots near the surface. Trees planted a short distance from walls, on mounds, will require staking to prevent them becoming loosened by winds. Top-dress the roots slightly with leaf-mould or short manure to prevent heavy rains from making the soil hard on the surface.

Pruning.—The winter pruning of all kinds of fruit trees, with the exception of Peaches and Figs, may be commenced. The extent to which pruning may, with advantage, be practised depends very much on the subject under treatment, for its rate of growth and other circumstances must be taken into consideration. I do not recommend severe pruning; when the roots are kept in balance with the top growth this is never necessary. Where summer pruning has been carefully performed, winter pruning will chiefly consist in shortening the leading shoots and removing useless or dead spurs. Large branches or spurs that are cut off with a pruning saw should have their cut surfaces trimmed clean with a sharp knife. Pruning with the knife is preferable to using secateurs, for the use of the latter often causes the spurs to develop badly.

Strawberries.—There is not much use in hoeing now as a means of keeping Strawberry beds free from weeds, which should be removed by hand. Neither sunshine nor wind is sufficient now to destroy weeds following the use of the hoe.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Freesia.—Plants of the earliest batches require staking, for the shoots should never be allowed to fall over. If wanted in flower for Christmas the plants should be grown in an intermediate temperature—this is only a means to a particular end—for if Freesias are to be had at their best they should be grown perfectly cool at all times. Freesias raised from seed sown during spring should, if well grown, be showing their flower spikes, and may be placed in a light position in a cool house.

Cineraria.—The earlier plants of Cineraria that are sending up flower trusses should be grown in a light position in a cool house; seedlings from later sowings should be potted on as the plants require increased root-room. They may remain in cold frames, protecting them at nights in cold weather. Keep a sharp watch for the leaf-mining maggot, and fumigate the plants at regular intervals to prevent attacks of aphids.

Potting Materials.—Loam, leaf-mould and sand should be placed under cover for winter use, before it becomes too wet. These materials are, of course, better left outside, if they can be protected from rains.

Cyclamen.—These plants are developing flowers freely, and may be allowed to bloom in successional batches, according to requirements. They should be kept growing actively by feeding the roots with soot water and guano. Use great care in watering, and see that water is not poured in the centre of the plant, as this would cause the young flower buds to rot. The plants should be examined every day for the purpose of removing decaying leaves and flower buds. For use as cut blooms the flower stalks should be pulled out, not cut, for the cut end of the flower stalk that remains would decay and be a danger to the flower buds. When pulled out, cut off the hard end of the stalk, and place the latter in water as soon as possible; when allowed to flag, the petals do not stiffen again very readily, and this is especially true of the giant forms. It is always advisable to partly split the flower stalks of the giant forms before placing them in water. Plants raised from seed sown in August should be ready for pricking off into well-drained pans or boxes. Use a light, sandy compost, and stand the pans on a shelf near to the roof glass in a house having an intermediate temperature.

Campanula pyramidalis.—Plants intended for flowering next year should be removed to a cold frame. Although this Campanula is hardy in the south, it does best when given the shelter of a frame. If a frame is not available, the plant will winter well at the base of a warm wall, plunging the pot to the rim in ashes to protect it from damage by frost. Young plants should be shifted into larger pots; although they will make little top growth in winter, the roots are active, and the plants will thus be ready for another shift early next year.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Potatos.—Advantage should be taken of wet weather to examine Potatos in store, and remove diseased or faulty tubers. Potatos may now be stored more thickly and thus economise room; place them on a layer of straw and also provide a covering of the same material to exclude light and prevent frost from reaching them. Seed-tubers, selected in the spring from plants that were forced, are sprouting naturally, and are ready for planting to provide a supply early in March. The plants may be grown in 10-inch pots, which should be half filled with soil. Place two sets in each pot and lightly cover them with soil. If heated pits can be spared for the purpose, the forcing of Potatos presents few difficulties. On a mild hot-bed place nine inches of light soil, allowing a space of at least twelve inches between the soil and the glass. Make the rows fifteen inches apart and allow a space of ten inches between the sets in the rows; plant the tubers two inches deep. Whether grown in pots or on a hot-bed, add more soil when three inches of top-growth has been made. Provide for successional plantings by arranging the tubers in shallow trays, placing the rose ends uppermost, and sprouting them in a light position in a frost-proof place.

Broad Beans.—Broad Beans intended for wintering in the open should be sown in a warm, dry situation, sheltered from the north and east. Varieties of the Longpod type should be sown early in November, on rich ground that has been made firm. Sow in double lines made one foot apart, covering the seed to a depth of two inches, and allow a space of two feet six inches between additional pairs of rows.

Salsify and Scorzonera.—Roots of these vegetables should be lifted and stored in damp sand, for use during the winter. Remove the foliage, but defer trimming off the small fibres until the roots are required for cooking. If Chards are desired, a portion of the Salsify crop should be left in the ground.

Spinach.—Winter Spinach has grown freely this autumn; if the first thinning was insufficient, draw out a few more plants. The leaves should be gathered as they become fit.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNBURNHOLME, Warter Priory, Yorkshire.

The Rock Garden.—The employment of dwarf Conifers and shrubs in the rock garden is commendable, and without them rock gardens are apt to become devoid of interest in winter and monotonous in summer. Judiciously arranged groups are desirable, and single specimens of bold aspect are effective when planted in somewhat isolated positions or amongst exceedingly dwarf and trailing species. The stratified lines, obtained in the correct placement of stones, should be followed and accentuated by the planting of trailing and tufted species; these should proceed chiefly from points on which plants of somewhat rapid growth are situated. The dwarf golden Larch (*Larix Kaempferi*) and some half-dozen varieties each of *Abies*, *Juniperus*, *Retinospora*, *Taxus* and *Cupressus* are pleasing; whilst special mention may be made of the Tea Table Pine (*Pinus Tanyosho*), also *Cedrus Libani* Comte de Dijon, a Conifer growing but a few inches high. Varieties of *Cotoneaster*, *Veronica*, *Cytisus*, *Daphne*, *Pernettya*, *Berberis* and dwarf *Rhododendrons* are a few shrubby plants that may be employed to advantage in the rockery. Sharp frosts may occur at any time now, and stone steps and pathways should then be lightly sprinkled with coarse sand to prevent accidents by slipping. Dry Bracken fronds or other suitable material should be in readiness to protect evergreen Azaleas and other tender, upstanding species. The leaves of specimen *Cordylines* may be drawn closely together to admit of protecting the plant from the base of the crown with a hay-band.

Deciduous Shrubs.—Planting deciduous shrubs early in autumn is advantageous, as the roots make considerable growth before the ground becomes frozen, and much time in watering the plants in the succeeding summer is thus saved. Planting may be continued with success, in open weather, throughout the winter. Thorough preparation of the selected site by trenching and incorporating partially-decayed leaves and manure with the lower soil is conducive to good results; the ash from a garden bonfire forms suitable material to fork into the surface soil before planting. It is imperative to plant firmly, and this operation should be followed by thoroughly watering the roots. Generally speaking, the curtailment of shoots—often advisable to promote vigorous growth in newly-planted specimens—is best deferred until early spring; in the case of very early-flowering species, such as *Forsythia*, *Stachyurus* and *Ribes*, give attention to this matter in February. Charming foliage effects, in colours ranging from crimson to gold, are obtained in the autumn by a judicious grouping of deciduous trees and shrubs. *Acer*, *Azalea*, *Deutzia*, *Gleditschia*, *Prunus*, *Spiraea* and *Viburnum* are subjects which include varieties suitable for giving superb autumnal colourings, whilst many of them give a wealth of bloom in spring.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENCER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cleansing Fruit Houses.—The work of pruning and cleansing fruit houses will now call for continuous application, except in the latest houses. Trees free from insect pests are necessary for success, and this work cannot be too carefully performed. Red spider and mealy bug are possibly the worst pests of the vine grower. With ordinary care, the first may be kept in check by careful attention to cultural details, such as damping and syringing. I do not favour the use of mixtures of clay, tar, etc., for the eradication of mealy bug, but prefer a soapy insecticide or Gishurst Compound, which is safer in unskilled hands and equally as effective. Repeated washings are necessary in bad cases, and the cleansing of the vines is not the most difficult part, as mealy bug harbours

in the walls, trellis, and other similar places, where it is most difficult to destroy. Even when cleansing has been carried out carefully, some bugs are sure to escape destruction, but by persistent attention in the spring, when the vines are breaking into growth, with a small brush and methylated spirits, very few will escape.

Pot Vines.—The earliest pot vines should, provided they are ripe and well rooted, be pruned and made ready for forcing. Successful forcing depends as much on the proper preparation of the vines as on any single detail afterwards. The earliest of these vines were shortened to a suitable length some time since, and there should be no danger from bleeding, but, to make sure, the wounds should be dressed with styptic. If very early Grapes are required, the vines may be started towards the end of the present month.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Pleione.—Pleiones are among the few Orchids that require attention about this date, or two or three weeks hence, according to the condition of the plants. Among those that flower at this season are *P. Lageraria*, *P. maculata*, *P. praecox* (see Fig. 106) and its variety *Wallichiana*. *P. praecox*, popularly known as the Indian Crocus, was first discovered by Dr. Wallich on the Khasia Hills, and was sent home by the collector Gibson in 1837. It was also found by Dr. Hooker in 1849-50, and when I was at Darjeeling in 1917 I had the pleasure of seeing masses of this beautiful Pleione in full bloom growing on the ledges of rocks, and most of my spare time was spent in looking for a plant which differed from the type; the majority of the flowers are pale rose-coloured. *P. humilis* and *P. Hookeriana* bloom somewhat later, so they will not need attention for several weeks. The flowers of Pleiones are produced with the young growth, and when the former are over the annual repotting should be done. Shake the soil from among the pseudo-bulbs, taking care not to injure the new growth, and cut off most of the old roots, leaving only a little tuft at the base of each pseudo-bulb to hold the plant in position. Shallow pans are the most useful receptacles, and those 8 inches in diameter are a convenient size. Each pan should be filled half its depth with broken potsherds for drainage, over which place a layer of moss to ensure a free passage for water. The rooting medium should consist of a mixture of good fibrous peat, yellow fibrous loam, and chopped Sphagnum-moss in equal parts. A sprinkling of sharp sand may be added, and, if the loam is of poor quality, a portion of dried cow manure may also be included, but this material should be first rubbed through a fine-meshed sieve. In repotting, distribute the growths equally over the surface, and leave sufficient space for the young shoots to develop, so that, when the new pseudo-bulbs are completed, they will be arranged evenly, and produce a painful of flowers as shown in the illustration. Each pseudo-bulb should be planted firmly in the soil, and the centre raised slightly, but not enough to make given watering a difficult operation. If the pseudo-bulbs are of various sizes, they should be graded. When repotting is completed, arrange the pans on a shelf in the intermediate house, or a similar position fairly near the roof glass. For several weeks little or no water will be needed, but the soil must not be allowed to become excessively dry, for, although growth and root action will be slow, the plants will make a little progress. As root action increases, and the leaves begin to expand, water may be afforded more liberally, and, directly the new pseudo-bulbs are formed and throughout their subsequent development, an abundance of moisture at the root is necessary. At this stage use weak liquid manure alternately with clear water. To prevent red spider infesting the plants, spray the foliage with clear water occasionally during hot weather, and sponge the undersides of the leaves.

ORCHID NOTES AND GLEANINGS.

MILTONIODA COOPERI.

FLOWERS of this brightly-coloured hybrid between *Cochlidia Noezliana* and *Miltonia Warscewiczii* are sent by the raisers, Messrs. Sanders, St. Albans, who, with their many crosses between Miltonias and other species and hybrids, have done much to extend variety and colour in a very useful decorative section of Orchids.

The flowers sent are superior to those of the original, which first bloomed in 1913. Although the firm substance and undulated brownish-purple markings of *M. Warscewiczii* are strong features, the cross with the scarlet *C. Noezliana*

has quite obliterated those characters, all the segments being flatly arranged, the sepals and petals uniform cinnabar scarlet, and the broadly ovate lip rose-pink flushed with scarlet. The crest is bright yellow.

VANDA COERULEA.

WHEN this beautiful blue Orchid has passed the flowering stage, the plants should be arranged in the Cattleya house, unless a division is set apart specially for them. Place them in a light position and be sparing with water; only sufficient moisture to keep the leaves in a plump condition is needed. Care must be taken in regard to atmospheric moisture, or the foliage will soon become disfigured with spot disease. B



FIG. 106.—PLEIONE (COEOGYNE) PRAECOX.

NEW HYBRIDS.

(Continued from September 18, p. 143.)

Name.	Parentage.	Exhibitor.
Brasso-Cattleya Jean	B.-C. Mendel x C. Dowiana aurea	J. J. Joicey, Esq.
Brasso-Cattleya Lilian	B.-C. Digbyano-Mossiae Queen Alexandra x C. chocoensis	J. J. Joicey, Esq.
Brasso-Cattleya Mrs. Pantia Ralli	B.-C. Mrs. J. Leemann x C. Warscewiczii, Fr. M. Beyrodt	Pantia Ralli, Esq., W. R. Facey, Esq., Baron Schroder, Pantia Ralli, Esq., Singers.
Brasso-Laelio-Cattleya Amber	B.-C. Mrs. J. Leemann x C. granniosa	Charlesworth & Co.
Brasso-Laelio-Cattleya Citrina	B.-L.-C. The Baroness x C. Dowiana aurea	Duke of Marlborough.
Brasso-Laelio-Cattleya Empress	C. citrina x B.-L. Jessopii	Charlesworth & Co.
Brasso-Laelio-Cattleya Golden Crown	C. Enid x B.-L. Digbyano-purpurata	Duke of Marlborough.
Brasso-Laelio-Cattleya-Winston	B.-L.-C. Joan x C. Venus	Charlesworth & Co.
Cattleya Amy May	L.-C. Canhamiana x B.-L. Digbyano-purpurata	Duke of Marlborough.
Cattleya Ceiri	Empress Frederick x Dowiana aurea	Charlesworth & Co.
Cattleya Cerberus	Harisoniana alba x L. dy Veitch	Duke of Marlborough.
Cattleya Elfin	Interexta Juliettae x labiata alba	Charlesworth & Co.
Cattleya Eve	Mantini x Peetersii	Duke of Marlborough.
Cattleya Lacrozeae	D. selderei Undine x Lady Veitch	Charlesworth & Co.
Cattleya Royal Purple	Hardyana x Adula	Charlesworth & Co.
Cattleya Troilus	Alexandra x Empress Frederick	Charlesworth & Co.
Cypripedium Barbara	Luegeae x Clotho	Charlesworth & Co.
Cypripedium Climax	Gaston Bulteel x Harri-Sander	Sir H. S. Leon.
Cypripedium Emerald	Alcibiades x Harri-Sander	S. G. G. G. G.
Cypripedium Frontline	Cartisii Sanderac x Maudiae	Charlesworth & Co.
Cypripedium Rosamond	Mirum x Leeanum	Charlesworth & Co.
Cypripedium Warden	Troilus Lord Nelson x Charlesworthii	Charlesworth & Co.
Laelio-Cattleya Aris	Holdenii x Maudiae	Charlesworth & Co.
Laelio-Cattleya Dolores	Lucasiana x Haroldiana	Charlesworth & Co.
Laelio-Cattleya Iguazetta	L.-C. albanensis x C. Mantini	Charlesworth & Co.
Laelio-Cattleya Grand Monarch	L.-C. Lustre x C. Empress Frederick	Charlesworth & Co.
Laelio-Cattleya Marius	L.-C. Nella x C. Trianae	Charlesworth & Co.
Laelio-Cattleya Nero	L.-C. luminosa x C. Rhoda	Charlesworth & Co.
Laelio-Cattleya Voltairre var. Solon	L.-C. Hildegard x C. Dowiana aurea	Charlesworth & Co.
Laelio-Cattleya Virgil	L.-C. G. G. Whitelegge var. Violetta x C. Dowiana	Charlesworth & Co.
Odontoglossum autumnalis	L. C. blechleyensis x C. Dietrichiana	Charlesworth & Co.
Odontoglossum Dusky Queen	crispum var. x Swartzianicolor	Charlesworth & Co.
Odontoglossum Mrs. J. A. Wood	Jasper x Aquilana	Charlesworth & Co.
Odontoglossum Phyllis var. Moorgate	Rex x crispum P. rfection	Charlesworth & Co.
Odontoglossum Sir Harry Veitch	White x ximium	Charlesworth & Co.
Odontonia Nydia	Mrs. x Menier St. Vincent	Charlesworth & Co.
Sophro-Laelio-Cattleya Camden	M. Hyena x Odont. Harri-Sander	Charlesworth & Co.
Sophro-Laelio-Cattleya Madge	L.-C. Oakwood Alpha x S. C. Doris	Charlesworth & Co.
Vuystekeara Memoria Joseph Charlesworth	S.-L.-C. Sibyl x S. C. Doris	Charlesworth & Co.
	M. Charlesworthii x Oda, Brewii	Charlesworth & Co.

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NEW RHODODENDRONS.

UNDER Prof. Sir I. Bayley Balfour's untiring hand the enumeration of new species of this prolific genus proceeds apace, and forty more are presented to us in detail within the familiar blue cover.*

Of the species now enumerated, the majority is Chinese, and all but five are Forrestian; the high serial numbers of many are indicative alike of recent discovery and of the courage, industry and resource of the explorer, whose name must be permanently associated with the genus.

Five of the new species come to us from S.E. Tibet, where, as we have been told, Forrest considers the matrix of the genus will ultimately be found, and Ka-gwr-pw, that wonderful mountain rivalling Wa-shan in the richness of its flora, is responsible for four of the five. The Muli Mountains in S.W. Szechuan, a district Forrest explored for the first time during his last expedition, account for six species.

Only five of the new Rhododendrons—agglutinatum, denditrichum, nakotiltum, planeum and pyrroanthum—are not given a definite phyletic position, and as is to be expected, many of the others are akin to species already described. In such cases the specific distinctions are set forth in that peculiarly lucid fashion which renders these analyses so valuable to the science of botany. Indeed, as the work of enumeration proceeds, we are able to follow the gradual evolution of tribal relationship under a particular species as the head of the tribe. Rh. euxodum provides an appropriate illustration of this. In part III. of the enumeration we were introduced to this species as one of a group of dwarf moorland plants discovered by Forrest on Ka-gwr-pw at 13,000-14,000 ft., and as at that time the relationship of the plant was not clear, the author placed it tentatively as a stray sheep of the Rh. sanguineum fold.

The arrival of further Forrestian material has furnished the author with three more Rhododendrons of the same fold, yet to the botanical eye distinctively different, and these are now merged with Rh. euxodum into one phylum intermediate between Rh. sanguineum on the one hand and Rh. neriflorum on the other. It may well be that further exploration will yield forms which will enable the botanist to trace the geographical development of all the members of the phylum. The three species referred to are Rh. pothinum, tamenium, and trichomiscum.

The enthusiast will naturally look for the plums in the Forrestian cake, and though perhaps on this occasion they are less numerous than in previous parts of the enumeration, he will have no difficulty in finding them; indeed, under the system of nomenclature adopted by Prof. Balfour, the good things are clearly labelled. We see this in the species christened Rh. eclectum (from ἐκλεκτός, to be chosen out as a plant worthy of cultivation), Rh. megeratum (from μεγέρος=passing lovely), and so on. In this connection we cannot but

admire the profound skill which, from a critical examination of herbarium specimens, is able to assess the floral qualities of plants growing in places thousands of miles away.

If there is no mention of any new giant among the Chino-Tibetan species, several are described that grow naturally from 15 to 30 feet high, and of these Rh. megaphyllum is a plant of the Falconeri set with the young wood and underleaf covered with the cinnamon-coloured indumentum so noticeable in that species.

To the series of which Rh. grande is the head, belongs Rh. protistum (πρότιστος=first of the first) which Forrest discovered sheltering in a Rhododendron forest at 13,000 feet, on the Mekong-Salween divide. It grows about 30 feet high and has huge leaves, as much as 18 inches long and five broad. The Thomsonii group has a new member in Rh. Meddianum, of medium growth (4-6 feet), from the Shweli-Salween divide, with fleshy flowers of a deep crimson.

The unusual pearly-grey bloom of the leaves of Rh. oreotrophes has always been a singularly attractive feature of that species, and it has been left to Prof. Balfour to make the interesting discovery that the character is due to a film of wax. The same peculiarity is noticeable in Rh. eclectum and Meddianum—both plants of the Tsarong—and that there may be no doubt as to the nature of the covering, it is explained that the wax may be removed by benzol, or other solvent.

Of species other than Chinese, there are five from the western side of the Upper Burmo-Chinese frontier, Rh. tapeinum, a dwarf species; Rh. sidereum, a new member of the Grande series, which Farrer considers a fine thing; Rh. preptum, one of the Falconeri set, allied to the so-called Rh. lacteum of Wilson, now known as Rh. galactinum; and Rh. Jeniesterianum, from the Salween side of the N'Maikha-Salween divide. In Rh. regale (Ware), N.E. Burma also furnishes yet one more addition to the growing family of which Rh. Falconeri of the Eastern Himalaya is the original representative, so that there are now 14 in this series, distributed over a widely separated area, and all noble plants. Not all the Falconeri series have the cinnamon-red felt characteristic of the Himalayan species, and Rh. regale is one of four species in which the felting on the underleaf is grey, not cinnamon-red.

The description of Rh. Macabeanum gives occasion for a deeply interesting account, from the pen of Sir George Watt, of his discovery of the species in Manipur, in 1832. He regarded the living plant as distinct from Rh. Falconeri, but dried specimens of the two Rhododendrons approached each other so closely that Sir George Watt considered it advisable to regard Rh. Macabeanum as a form of Rh. Falconeri. Sir Isaac Balfour, however, has no difficulty in assigning to it a position in the Grande phylum, midway between Rh. grande of Sikkim and Rh. sino-grande of Yunnan. This species provides one more instance of the comparatively wide geographical distribution of Rhododendrons at one time regarded as Himalayan in their location.

No one interested in the genus can fail to observe the astonishing number of yellow-flowered species described in this most interesting enumeration. From first to last no fewer than 12 are now published, and the mind instinctively recalls the time—not so many years ago—when a Rhododendron with yellow flowers was indeed a rare plant. A. Grove.

OCCURRENCE OF KEITHIA THUJINA IN IRELAND.

THE occurrence of this fungus on Thuja plicata was first recorded in Ireland in the summer of 1918, at the Forestry Centre at Bannreagh, Queen's County. An account of the attack was given by Dr. G. H. Pethybridge in the Quarterly Journal of Forestry for April, 1919, and was apparently the first record of the disease in Europe. Since that date, however, it has been found in various parts of Ireland, which suggests the desirability of planting Thuja with caution until the exact significance of the disease can be ascertained.

As stated in the article referred to, the first attack was noticed on 3-year seedlings which had been lined out the previous winter. These seedlings were all killed by the fungus during the summer of 1918. A few yards away the plants in a mixed plantation of Thuja and Japanese Larch, planted in 1912, were growing vigorously at the time the seedlings were attacked. No trace of disease could be found in the plantation, but traces of it were found in other trees on the property. The seedlings attacked had been raised from seed collected in a small pinetum a few miles away, while the Thuja in the plantation were obtained from an estate in the same county, and had been raised from seed collected on the spot, so that no suggestion could be made that the disease had been introduced with imported plants.

In the same year as the Queen's County attack, a note by the late Sir Edmund Loder in the Quarterly Journal of Forestry recorded a case of an attack in a plantation at Leonardslee which had been planted in 1910, and which had grown well up to that date. It does not appear from this note that the trees were fatally injured by the fungus, but the writer stated that the majority of the plants were destroyed with the idea of stamping out the disease.

Enquiries made by Dr. Pethybridge, and the examination of American literature, failed to throw any light on the fatal nature of the disease in either Canada or the United States, and it was hoped that the Bannreagh case would prove an isolated instance as regards Irish nurseries and woodlands.

Since 1918 the disease had been noticed in various parts of Ireland, and seems to be widely spread. Serious or fatal injury to Thuja had not been recorded down to the end of 1919 other than the Irish case referred to and that at Leonardslee, and the former was regarded more as one of scientific interest than of economic importance.

In the autumn of this year, however, two cases have occurred which are sufficiently serious to cause some anxiety as to the ultimate effect of this disease on attacked plants. One of these was in the mixed plantation of Thuja and Japanese Larch at Bannreagh. In the spring of this year the Thuja were noticed to be badly attacked, and at the present time it appears probable that the whole of the plants will be destroyed, as not only are the scale leaves showing characteristic brown spots caused by the fungus, but many of the leading and side shoots are withering owing to the axis of the stems being killed. It was thought that possibly the shading of the Larch might have hastened the spread of the disease, but it is not quite certain that this is the case, as plants more or less free from shading are badly damaged. The spread of the disease to this plantation is not surprising owing to the proximity of the seedlings in the adjoining nursery, but a year elapsed from the time the seedlings were destroyed until it made its presence felt on the transplants to any appreciable extent.

At Camolin, County Wexford, another centre in the hands of the Department of Agriculture, 4-year transplants in the nursery and branches on an adjoining Thuja hedge were seen to be affected with Keithia thujina last spring. The first intention was to destroy these plants, but it was later decided to spray them with Bordeaux mixture as an experiment, and move them out to a distant planting area.

* Notes from the Royal Botanic Garden, Edinburgh, Vol. xii., Nos. lvii-lviii. New species of Rhododendron IV. By Prof. Bayley Balfour, F.R.S.

at once. So far these plants have made a normal growth for transplanted trees, but the characteristic brown and dead patches on the scale leaves give them an unthrifty appearance. In the same nursery transplants of the same age a few yards away were apparently free from disease, and several beds of 2-year seedlings raised from seed collected in County Limerick, and standing about 100 yards from the affected transplants, were apparently quite healthy. At the beginning of August, however, the disease appeared on the seedlings, and the entire batch will probably have to be destroyed.

These are the only cases of serious injury which have apparently occurred in Ireland, but the rapidity with which the disease spreads renders it highly important that the existence of *Keithia* should not be regarded too lightly. It is evidently not one of those diseases which vary in their occurrence and intensity with the health of the host plants, as in all the cases quoted above the plants attacked were perfectly vigorous until the fungus appeared.

It is difficult to account for the disease remaining unobserved until 1918, as from observations made both in Ireland and parts of Great Britain the fungus is much more widely spread than might be supposed. This being the case, its innocuous nature in some cases, and its fatal character in others, require explanation. It is scarcely possible that the appearance of the disease in two centres, namely, Baunreagh and Leonardslee, can be due to one cause of infection, in view of the facts mentioned. If the disease previously existed unobserved it is strange that no serious outbreaks occurred from time to time during the last few years, but the absence of any records before 1918 would indicate that this was the case. Future planters, however, must be prepared to treat this disease seriously, and it becomes a question of how far *Thuia* may be used in new plantations with reasonable safety.

The economic importance of *Thuia* lies in the fact that it succeeds in wet and swampy soils, especially those of a peaty nature, where other species are difficult to establish owing to the prevalence of spring frosts. Many spots in which Sitka Spruce have suffered seriously from frost have been successfully planted with *Thuia*, and its rate of growth during the first twenty years renders it a valuable tree for the production of small timber suitable for pit-props, fencing, boxwood, etc. There is little evidence that it will prove a tree of first-class magnitude, or attain in this country anything like the dimensions it reaches in North America, but the short period in which it reaches the pole and small timber stage renders it one of the most valuable Conifers grown in the British Isles on certain soils and situations.

In future, and until the significance of the disease can be ascertained, it will probably be sound policy to restrict its use to widely-separated groups, so that in the event of failure through disease the trees can be destroyed at once, and the ground replanted with some other species. In this way the spread of the parasite may possibly be checked in any district in which it appears. *A. C. Forbes.*

THE BULB GARDEN.

IRIS OCHROLEUCA.

In a recent note on this fine species (see p. 191), it was stated that it must be called *I. orientalis* and not *I. ochroleuca*. It is perfectly true that Miller's name of *orientalis* is older than that of *ochroleuca*, but we are relieved from the necessity of retaining it by the fact that his text gives the Iris a beard ("*corollis barbatus*"). Moreover, he supports this mistake by a figure which shows a curious transverse beard running across the falls. Miller is probably also mistaken in saying that *I. ochroleuca* comes from Carniola, for it seems certain that it is a native of Asia Minor, and not of Europe.

I. ochroleuca is well-named, for it is pre-

eminently the white and yellow Iris and, as it happens, it is most convenient that this name should stand instead of *orientalis*, for the latter is needed for the eastern ally of *I. sibirica*. The curious fact about *I. sibirica* is that there appears to be no evidence that it grows anywhere east of the Ural Mountains. It is a native of Central Europe and is found in Germany, Switzerland, Hungary, North Italy and Central Russia. Between the Urals and Corea there is, I believe, no recorded trace of any specimens of *I. sibirica*, or of closely allied species. In Corea, however, there occurs a form which is in some ways intermediate between *sibirica* and *orientalis*, and it is readily distinguished by the green ground colour that underlies the purple veining on the throat and haft of the falls. Typical *I.*

The well-known Snow Queen has thus nothing whatever to do with *Iris sibirica*, but is an albino form of the Japanese *Iris orientalis*. Indeed, it probably arose under cultivation in Japan, and can easily be distinguished from the white forms of the European species. In these the flowers are much smaller and usually veined, and often tinged with lilac or purple. For garden purposes the most decorative plants result from crossing the two species, for the hybrids usually have the large flowers of *I. orientalis* on the tall stems of *I. sibirica*. Variations in colour may easily be obtained in either species by crossing the white and the blue forms, and this method is capable of producing a colour that is near to a real sky-blue *W. R. Dykes.*



FIG. 107.—ROSE CORAL CLUSTER.

National Rose Society's Certificate of Merit, September 23, 1920. (See p. 173.)

sibirica has comparatively small flowers raised high above the foliage, and large flat seeds, in shape like a capital D. The capsule is broad and rounded.

I. orientalis, on the contrary, comes from the extreme east, namely from Japan, and has relatively larger flowers. The stems are approximately equal in length to the foliage, but the latter droops and so allows the flowers just to stand clear of the leaves. Other characteristic features are found in the small cubical seeds and in the narrower, sharply, three-cornered capsules.

TIGRIDIA.

PLANTS of *Tigridia* should be lifted and all bulblets detached from the bulbs forthwith; the winter treatment usually afforded *Gladiolus* suits them. Rich, free loam, with the addition of leaf-mould and sand, is necessary to produce good flowering plants; a sunny sheltered position is also desirable. In mid-April, plant the corms three inches deep and six inches apart, using a little coarse sand around them individually. Although the gorgeously coloured flowers are very fugitive, fresh ones are produced over a long period *S.L.*

CULTURAL MEMORANDA.

HARDY SHRUBS FOR FORCING.

LARGE numbers of hardy shrubs are suitable for forcing, and some of them, such as *Rhododendrons*, will give good results if merely lifted from the ground and potted. Others, such as *Lilacs*, species of *Pyrus*, *Prunus* and similar subjects can only be had at their best when grown in pots over a sufficiently long period to become established and active at the root.

It is true that most of the shrubby species used for forcing prove more or less successful when forced if merely lifted from the ground, but there is a great difference in the time they last in flower compared with those specially prepared in pots. Pot-grown *Lilacs*, for example, will give flowers that keep fresh for several weeks, while those of plants lifted from the ground will only keep fresh for a few days. Where a stock is grown in pots the plants should now be sorted, selecting and standing together all those that are well set with flower buds; at the same time examine and correct faulty drainage. Subjects that have to be lifted from the ground and placed in pots or tubs should be attended to forthwith, that they may have time to make fresh roots before they are forced. Pot firmly and work the soil well in between the roots. The plants should afterwards be stood out of doors, and the pots protected from frost by placing leaves or litter of some sort around them. Some of the most useful shrubs for forcing are *Pyrus floribunda* and its variety *atro-sanguinea*; *P. spectabilis* and *P. Scheideckeri*. The *Prunus* family includes the beautiful double flowering *Peaches*, also *P. triloba* var. fl. pl., *P. japonica*, of which there are two double varieties, rose and white-coloured; *P. subhirtella*, and the Japanese *Cherries*, *P. Pseudo-cerasus*.

Spiraeas, such as *S. arguta*, *S. prunifolia* fl. pl., and *S. Van Houttei*, are also suitable for forcing. Of *Lilacs*, some of the most reliable varieties are *Marie Legraye*, *Charles N.* and *Mme. Lemoine*, double white. *Kerria japonica* var. fl. pl., is an excellent plant that forces readily. *Dentzia gracilis* is also an old favourite for this purpose. *Forsythia suspensa* is also useful, but is excelled by *F. spectabilis*, which flowers with wonderful freedom, and lasts in bloom for several weeks in a cool greenhouse. *Xanthoceras sorbifolia* is less commonly used for forcing, but it is a very beautiful plant in flower. Large, pot-grown specimens of *Wistaria chinensis* flower with great freedom, but they will not stand much forcing, and should be brought on gradually in a cool house.

The *Azaleas* of the so-called Ghent section include a wide range of beautiful colours. The small, white-flowered, sweet-scented *Azalea Davisii* is very popular for flowering early under glass. *Rhododendron praecox* is naturally early in flowering and excellent for forcing, as also is the variety, *Rosy Bell*. Among the larger evergreen *Rhododendrons* there is plenty of material to choose from, but all are not adapted for forcing, the most suitable varieties in most cases being those that naturally flower early. One of the best and most dependable is *Rosa Mandi*. It is dwarf, very floriferous and may easily be had in flower at Christmas. Good early varieties are *Boule de Neige*, *Cunningham's White*, *Mme. Wagner*, *Prince Camille de Rohan* and *Pink Pearl*.

PRUNING NEWLY-PLANTED FRUIT TREES.

WITH reference to the note on this subject on p. 200, I have long held the view that newly-planted fruit trees succeed much better when pruned the same season they are planted than those which are not pruned until the year following, or perhaps not at all. I cannot understand the argument of those who prefer the latter system, especially when they see the result of such treatment daily before their eyes. The object of a fruit tree planter is, or should be, to obtain the largest area of branch space in the shortest possible time, not considering the amount of fruit the trees will furnish during the first few years. *E. M.*

FLORISTS' FLOWERS.

WINTER FLOWERING PELARGONIUMS

It has often been a matter of regret to me that Messrs. Pearson and Sons gave up the raising of *Pelargoniums*. I still grow some of their varieties, and am doubtful if these have been excelled in quality by any of the newer kinds. The trusses in the varieties of Messrs. Pearson's strain were not, as in many others, a conglomeration of crushed pips, but, in addition to the large size of truss and variety of colour, each of the pips was fully exposed. The great fault of *Pelargoniums* of the King of Denmark type is that they have far too many pips to permit of the full expansion of those in the centre of the truss. It is true that in this and *Paul Crampel*, for example, that superabundance is reduced in winter, and in that respect the novel *Victory* is exhibiting a tendency to a similar reduction, which is all to the good. *Pelargoniums* in flower are so glorious in winter that it is to be hoped that they will regain their lost popularity. I can remember when a house was set apart for the production of blooms from *Christine* (pink), *Madame Vaucher* (white), and *Vesuvius* (scarlet), and those who may have seen one or any of these varieties will be able to estimate in some degree the immense advance that was ensured by crossing the old *Nosegays* with the later round-petaled flowers. It was my custom to grow two sets of plants for winter-flowering, one of which, after flowering the previous winter, had the "balls" reduced early in summer and were re-potted in the same pots—6 inch ones. The plants produced a large crop of flowers in early winter, but the trusses were small comparatively. The others were rooted in March, and finally placed in 6 inch pots and flowered in mid-winter, being allowed a brief rest in spring, when they resumed flower production for a time. The only difficult time is in December and January, when an overdose of manure, excessive damp or fire heat, would be fatal to success. To check overgrowth, the tips of the shoots should be pinched off just beyond every young bud, and it is important that the plants have a clear space between each and are grown in a suitable structure. *R. P. Brotherston.*

EARLY-FLOWERING CHRYSANTHEMUMS AT ALDENHAM.

THE dry, warm weather through September and the early part of October has been especially favourable to early-flowering *Chrysanthemums*, enabling them to grow freely and flower without hindrance by frost or even continued wet weather.

The following varieties were making a pleasing show at Aldenham House Gardens in the mixed borders at the time of my visit, the middle of October:—*Normandie*, height 4 ft., colour bluish pink; *Howard Jaques*, 3 ft., salmon-flushed cerise; *Betty Spark*, 4 ft., clear rose-pink; *Beauty of Hayes*, 4 ft., purple; *Nina Williams*, 3 ft., bronzy red, gold reverse; *Fee Parisienne*, deep mauve; *Province*, pale pink, very free; *Framfield Early*, white, very free, shapely blossoms; *Medusa*, an orange coloured Japanese variety; *Perle Rose*, 4 ft., warm pink, a shapely, freely-produced flower; *Carrie*, late flowering yellow, growing fully 6 feet high; *Knaresboro Yellow*, 5 ft.; this, in my opinion, is one of the best of yellow-flowered varieties; the growth is erect, with stout stems and peduncles; *Cranfordia*, 4 ft.; this also is a grand yellow-flowered variety; *Perle Chatilionaise*, cream and blush; *Mme. E. Lefont*, an orange yellow coloured pompon, exceptionally free in blooming; *Horace Martin*, 4 ft., still one of the best of free-flowering yellow *Chrysanthemums*. *B. W.*

CALCEOLARIA BURBIDGEI.

It is worthy of note that *Calceolaria Burbidgei*, referred to on page 61, is given in the *Kew Hand List of Tender Dicotyledons* as a garden hybrid between *C. amplexicaulis* and *C. Pavonii*. *W. T.*

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Continued from page 219.)

MONMOUTHSHIRE.—With the exception of small kinds, the fruit crops generally were unsatisfactory. Of Apples, old standard trees had the best crops, and of Pears, *Durondeau* and *Pitmaston Duchess* gave the most fruit. Stone fruits of all kinds were very scarce, *Morello Cherries*, which were half an average crop, being the only exception. *Gooseberries* and *Loganberries* were abundant, while *Currants* and *Raspberries* were average crops. The *Strawberry* crop was damaged by heavy rains, otherwise it would have been a good one both in quantity and size of berries. *Cob nuts* are plentiful.—*Thos. Coomber, The Hendre Gardens, Monmouth.*

WORCESTERSHIRE.—The years 1918 and 1920 will long be remembered as giving almost the worst fruit crops on record. The deficiency this season is chiefly due to the heavy crops of last year, to the continued wet weather nearly all the time the trees were in bloom, together with the most persistent and virulent attack of insect pests of various kinds, the bad weather preventing thorough spraying at the proper time. With the exception of a few fruits of *Worcester Pearmain* and *James Grieve*, the Apple crop was a comparative failure. The Cherry crop, such as it was, was spoiled by the fruits cracking just as they ripened; it was sad to see the fruits of *White Bigarreau*, which comprised the best crop, spoiled by the continuous cold and wet weather. There are a large number of fine orchards in this county, planted during the past forty years, which are usually very valuable assets to the increased number of fruit farmers. *Raspberries* always enjoy a showery season, and were about the most lucrative crop, but *Strawberries* rotted before they were ripe. *Loganberries*, *Gooseberries* and *Red Currants* gave fair average crops, but *Pears* and *Plums* were very scarce. The *Egg* or *yellow Pershore Plum*, and also the dark *Pershore*, have hardy constitutions, and gave good crops, but these *Plums* are only fit for preserving.—*William Crump, V.M.H., Oakbridge, Malvern Link.*

—The fruit crops in this district are very unsatisfactory. *Red* and *Black Currants* and *Gooseberries* were all heavy crops. Of Apples we had fair crops of *Worcester Pearmain*, *Charles Ross*, *James Grieve*, *Warner's King*, *Bramley's Seedling*, and *Newton Wonder*. The *Pear* crop was a failure. We had a heavy crop of *Pershore Plums*, but only a medium crop of *Victoria*. The soil is of a fairly heavy nature, resting on a bed of sandstone.—*Ernest Avery, Finstall Park Gardens, Bromsgrove.*

—Rain was almost constant during the flowering period (April) of Apples, Pears and Plums, there being only four days on which no rain was recorded; the atmosphere was laden with moisture and the temperature low; most of the pollen was washed from the flowers and the remainder was rendered of little or no effect. Even the stigmatic fluid was absent in the majority of flowers examined.—*James Udale, 7, Ombersley Road, Droitwich.*

WALES.

CARDIGANSHIRE.—The fruit prospects were very poor, and the disappointment was all the greater as all varieties of fruit trees flowered most abundantly. All through the flowering period we experienced very wet, cold weather and very little sunshine. Severe thunderstorms, with torrential rain and hail, occurred in this district early in June. Only the following varieties had moderate crops of fruit:—Apples—*King of the Pippins*, *Charles Ross*, *Worcester Pearmain*, *Bramley's Seedling*, *King's Acre*, *Bountiful* and *Lord Grosvenor*; *Plums*—*Czar*, *Victoria*, and *Transparent Gage*. The soil is heavy clay, overlaid by slaty rock.—*W. Phillips, Derry Ormond, Llanygbe.*

(To be concluded.)

PLANT NOTES.

MESEMBRYANTHEMUM BROWNII.

This plant came to me as a good rockery subject, but unfortunately it has failed ever to expand a flower in the open. Even in a greenhouse the flowers have never developed beyond the bud stage, but in a little higher temperature the plants have borne numerous, richly coloured flowers of a crimson shade, and it is indeed a rather valuable plant for winter flowering in a stove. It is not improbable that in the warmer and sunnier parts of the United Kingdom it will be all that was expected of it here, where the climatic conditions are not suitable. *R. P. Brotherston, Tynningham Gardens, Prestonkirk.*

HYMENOCALLIS MACROSTEPHANA.

This, the finest of the Fairy-Lilies, is specially useful in the greenhouse in November, when summer flowers are over. It has been classed as a hothouse plant, but is not in reality so delicate as it has been considered, doing well in an ordinary greenhouse with a temperature of 50°. In common with the rest of the Amaryllids, it needs abundance of water when in growth, and less after flowering; but as its leaves are persistent, it should not be kept quite so dry as the *Pancratium* at any time, and its foliage should not be allowed to droop. The bulbs should be kept near the surface (leaving room for water) in a compost of good, sound loam, leaf-mould, and charcoal, the whole being thoroughly sterilised before use, to destroy all pests. As the bulbs increase, top-dressings should be afforded, and soot-water given the roots during the later summers; but they blossom best when the pot is full of roots, so that repotting is not often necessary. *I. L. Richmond.*

YUCCA VOMERENSE.

My Yuccas do not appear to have given such fine spikes of bloom this year, although there have been two or three exceptions. *Y. vomerense*, one of Mr. Sprenger's hybrids from Vomero, has given fairly good spikes, however, and to-day (October 26) there are still a few blooms left at the apex. This is a good grower, perfectly hardy, and makes offsets with a satisfactory amount of freedom. I have had the plant in my garden for a few years and would not like to be without it. This Yucca is not so bold in its habit of growth as some of its congeners, but it is well worth a place in gardens. *S. Arnett.*

VEGETABLES.

CUCUMBERS.

PLANTS sown in July are in full bearing, and old plants showing signs of distress should be removed, as they will be unprofitable after this date. Young Cucumber plants always develop many more fruits than they can mature, and a number should be removed early in order to preserve the plants in vigorous health. As the nights lengthen the cold increases, and a greater amount of fire heat becomes necessary. This means more moisture, but it is not advisable to syringe the plants much; sprinkling the beds and damping the paths only will generally suffice. Where the bottom-heat is wholly supplied by hot-water pipes the supply of tepid water should be more liberal and in sufficient quantity to keep the lowest roots in a moist condition. Plants in pots derive a great deal of nourishment from the plunging material, but in a limited root-run weak liquid manure and soot-water may be more frequently given. Later-sown plants intended to occupy houses in which late Melons are growing should be transferred without delay to their fruiting pots and their development hastened with all speed. A few good fruits will suffice generally in most establishments in winter, therefore the plants need not be cropped so heavily as in summer. *F.J.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Single Chrysanthemums.—These charming flowers are indispensable at this time of year to fill the place of the summer blossoms which are now failing us, and they last so well when cut that few flowers are so useful for decorative purposes in the drawing-room and on the dinner-table. Great Daisies as they are, in a rare variety of warm tints, perhaps those in shell-pink and in salmon-pink are the best of all and fortunately they are not scarce. Gladys Thorpe is a good example of the latter shade, most effective by artificial light, and Mary Richardson, blooming in the middle of October, is perfect in shape and in colour, being slightly more red than the other. In glowing yellow there are few finer single Chrysanthemums than Kitty Bourne, which also has the merit of great floriferousness and is of strong constitution. Phyllis Bryant is another beauty in sulphur-yellow, whilst Miss A. Holden is pale primrose. Metta, a large flower in bright pink with a white eye, is most effective, and Gem is one of the best of the pure white sorts. Amongst the new comers we have a group named after British generals; these are of great merit and mostly dwarf, about 2½ feet high. Amongst these General Byng, in terra-

rather light soil at Kew the plants average 3 ft. Lasting for quite three months in flower, *C. Campanile* is a valuable addition to late summer and autumn flowers. *A. O.*

Worcester Fruit Show.—One could not visit this show without being impressed by its educative value. An enthusiastic grower remarked that the Royal Horticultural Society had still much scope before it in the encouragement of fruit growing in this country, an opinion which many of the Fellows doubtless share. This rich Society might well devote more of its funds as prize money for fruit at many more of its shows. Crowded meetings would be the result, for, excepting in large establishments, where things are, of course, done well, fruit growing in this country is in its infancy. The Royal Horticultural Society should secure the finest display of British-grown fruit not once in a season, as at the autumn fruit show, but over an extended period. An attractive schedule for a Currant day, a day for Peaches, a Gooseberry day, a Peach and Nectarine day, an early Apple show, and even a spring Apple show, would remove any reproach that the R.H.S. does not sufficiently encourage fruit growing. It would put new life into what is still the premier horticultural society in the world. *Visitor.*

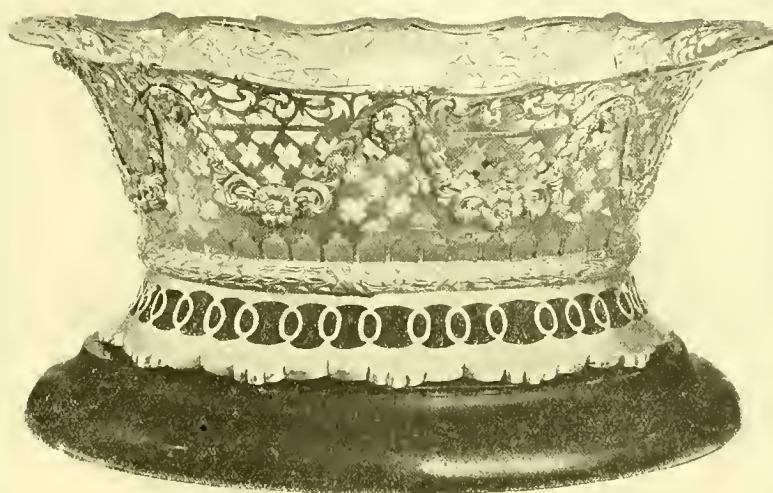


FIG. 108.—THE GEORGE MONRO CHALLENGE TROPHY FOR SINGLE CHRYSANTHEMUM.

(See Report of National Chrysanthemum Society, p. 233.)

cotta red; Gen. Botha, lemon-yellow; Gen. Currie, white; Gen. Plumer, orange buff; and Gen. Rawlinson, rich brown-red; Gen. Smuts very dwarf, and coloured deep crimson; Gen. Horne 1½ ft., apricot; Gen. Lawrence, 2 ft., chestnut; Gen. Haag is taller, brilliant red; and Gen. Birdwood golden bronze. This class of Chrysanthemums can be well-grown without the trouble and expense entailed by the cultivation of the large-flowered kinds; the cuttings are easily struck in February, and should be grown as sturdily as possible, pinching their tops when six inches high, and again when they have made six inches more green. This makes the plants bushy, and they may be planted in the garden in April, well watered and mulched in dry weather. *I.L.R.*

Clematis Campanile.—This hybrid clematis, raised by Messrs. V. Lemoine and Son, of Nancy, is a very valuable autumn-flowering plant. It is semi-shrubby in habit and occurred among a batch of seedlings of *C. Jouiniana* (syn. *grata*), which is a hybrid between *C. vitalba* and *C. Davidiana*. In foliage it resembles the last-named, and is very free-flowering, bearing light azure-lilac coloured flowers which are paler in the centre. The raisers give the height as 5 ft., but in our

Ornamental Dracaenas.—In addition to those enumerated in the article by "H.T." on p. 215, there are one or two others of horticultural merit. The very distinct species, *Dracaena Sanderiana*, has long stems clothed with comparatively short pointed leaves of a bright green, striped and variegated freely with pure white. A somewhat variable species is *D. fragrans*, with large, broad leaves, disposed in a regular manner. By far the best form of it is *Victoria*, with leaves striped green and gold. Lastly there is the Canary Island *D. Draco*, the ornamental qualities of which are, when young, of a high order, and it is of economic value from the red resin, known as Dragon's Blood, which exudes from the trunk. A celebrated tree at Orotava was long regarded as one of the wonders of the vegetable kingdom, but it was destroyed by a hurricane in 1867. *Old Florist.*

Blue Hydrangeas.—In your reply to "K.R." on page 186, one most important factor was omitted. For the treatment recommended to be effective a soil in which lime is absent, or in which it is present in only small quantities, must be used when potting the plants. This is why Rhododendrons and blue Hydrangeas are such a feature in some parts of Devonshire and Cornwall. *A.*

SOCIETIES.

ROYAL HORTICULTURAL.

NOVEMBER 2.—As the National Chrysanthemum Society held its exhibition on this date, the exhibits coming solely under the care of the R.H.S. were comparatively few. Orchids, Cyclamens and vegetables were finely shown. The hall was packed with visitors during the greater part of the day.

Floral Committee.

Present: Messrs. H. B. May (in the chair), E. A. Bowles, John Green, R. C. Notcutt, S. Morris, W. J. Bean, Jas. Hudson, G. Reuthe, John Heal, H. Cowley, J. F. McLeod, J. Jennings, Chas. Dixon, W. Cuthbertson, Chas. E. Pearson, H. R. Darlington, W. P. Thomson, J. T. Bennett-Poe, C. Williams, George Paul and A. G. Jackman.

AWARDS OF MERIT.

Cotoneaster salicifolia floccosa.—An effective shrub or small tree which has flattened boughs and a profusion of small red fruits borne in dense clusters. The leaves are narrowly lanceolate, deep green and strongly veined. Shown by the Hon. VICARY GIBBS (gr., Mr. G. Beckett), Aldenham House, Elstree.

Cotoneaster frigida Vicarii.—A glorified form of an old favourite tree. In this variety the fruits are of larger size, smooth, and bright shining red. The oval-lanceolate leaves are deep green above and grey beneath. Shown by the Hon. VICARY GIBBS.

Chrysanthemum Pourpre Poitevine.—A rosy amaranth Japanese variety (see also N.C.S. Awards, p. 233).

Chrysanthemum Huntsman.—A beautiful chestnut-red Japanese variety that promises well for market use (see also N.C.S. Awards, p. 233). Both shown by Messrs. W. WELLS AND CO.

GROUPS.

An excellent collection of pot plants of Cyclamen persicum was exhibited by Lady ANN, West Parkfields, Derby (gr., Mr. A. Sharnbrook). It is no light undertaking to transport seventy odd plants in seven-inch pots from Derbyshire to London in these days of reduced facilities and increased charges, and such enterprise as that displayed by Lady ANN deserves the highest commendation, particularly when, as was the case, it is associated with plants displaying high cultivation. (Silver-gilt Banksian Medal.)

Messrs. STUART LOW AND CO. added to their customary exhibit of Carnations a representative collection of winter-flowering Begonias. These included *Optima* and other large-flowering sorts as well as *Gloire de Lorraine*, *Turnford Hall*, and others of the small-flowered section. Amongst the Carnations the bright crimson *Lord Lambourne* and *White Pearl* were very prominent. (Silver Banksian Medal.)

Messrs. ALLWOOD BROS. illustrated by a large collection of cut bloom from the open ground that their *Allwoodii* Carnation is a most valuable border flower. The adjoining selection of perpetual-flowering varieties was particularly meritorious (Silver Flora Medal.)

Mr. J. J. KITTLE again showed a goodly variety of double and single Violets and heavily-fruited sprays of his seedling Raspberry Lloyd George.

Mr. G. REUTHE showed such interesting shrubs as *Rosa nitida* of rich autumn colour, *Athrotaxis cupressoides*, *A. selaginoides* and *Dacrydium cupressinura* with a selection of *Albines* and a few *Nerines*. (Silver Banksian Medal.)

Orchid Committee.

Present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Arthur Dye, W. H. White, Fred. K. Sander, J. E. Shill, E. R. Ashton, A. McBean, Pantia Ralli, Richard G. Thwaites, Frederick J. Hanbury, J. Wilson Potter and R. A. Rolfe.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontioda cardinalis (*Oda. Schrodriana* × *Odontoglossum crinum*) from Messrs. CHARLES-

WORTH AND CO. Size, colour and shape considered, this may be regarded as the finest *Odontioda* yet produced. The flowers equal the best *Odontoglossum crispum* in form, and measure over four inches across. The sepals and petals are scarlet crimson, the tips and margins white, tinged with lilac. The very showy lip has a chestnut red blotch in front of the yellow crest, the tip being white tinged with lilac.

AWARDS OF MERIT.

Cattleya Martella (*Fabia* × *Trianae*) from BARON BRUNO SCHRÖDER, The Dell Park, Englefield Green (gr. Mr. J. E. Shill). A true *Cattleya* of fine form, with pure white sepals and petals, and broad, Tyrian-purple lip, with a thin white margin and yellow disc.

Brasso-Cattleya Mrs. Pitt (*C. Octave Doin* × *B.-C. Digbyano-Warneri*) from H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). A model flower of soft rose-pink colour, the broad-fringed lip having a clear yellow disc.

Cattleya Picotee (*Hardyana* × *Octave Doin*) from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). A flower of perfect form with sepals and petals white flaked with lilac. The lip shows the *C. Mendeli* in *C. Octave Doin* in a marked degree; the front is ruby purple with gold lines from the base and there is a yellow patch on each side.

GROUPS.

SIR JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier) was awarded a Gold Medal for one of the best and most varied groups which has been staged for a considerable time. White *Odontoglossums*, both species and hybrids, with scarlet *Odontiodas* and showy *Laelio-Cattleyas*, were arranged at the back, the middle area being of good *Brasso-Cattleyas* and *Laelio-Cattleyas*. On each side were groups of the Gatton blue *Cattleyas*, and at the ends fine *Cypripediums* and other showy hybrids, the whole containing 350 specimens and occupying a space of 180 square feet. A feature of general interest in the group was a large number of pretty, rare species arranged along the front, and including species of *Cattleya* and *Cypripedium* used in hybridising, various *Cirrhopetalums* and *Bulbophyllums*, *Stenoglossis longifolia*, *Zygopetalum rostratum*, *Dendrobium Phalaenopsis* and species of *Masdevallia*.

MESSRS. CHARLESWORTH AND CO. were awarded a Gold Medal for a superb group, good in every particular, the plants being all worthy of the show stand, and grown and bloomed in the best manner. At the back of the group the varied "xanthotes" *Odontoglossums*, for which this firm is noted, mingled well with deeply-coloured *Odontiodas* and blotched *Odontoglossums*, a noticeable feature in the white forms being the large-flowered *O. crispum* raised by the firm. Specially fine were *Brasso-Laelio-Cattleya Joicevi*, forms of *Cattleya Serbia*, and *Laelio-Cattleyas* raised at Haywards Heath. Species worthy of note were the rare white *Angraecum recurvum*, *Megacalinum falcatum*, *Bulbophyllum Coeogyne*, and *Oncidium cheiroporum* with its neat sprays of clear yellow flowers.

MESSRS. STUART LOW AND CO. were awarded a Silver Banksian Medal for a group including a good selection of hybrid *Cattleyas*, *Laelio-Cattleyas* and *Sophro-Cattleyas* with *Oncidium varicosum* at the back.

MESSRS. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group in which their fine strain of *Cattleya Fabia alba* and other white *Cattleyas* were prominent.

OTHER EXHIBITS.

SIR JEREMIAH COLMAN, Bart., exhibited *Brasso-Laelio-Cattleya Antoinette* var. *Gladys* (*C. Portia coerulea* × *B. L. Helen*), a model flower of a clear rose tint with yellow disc to the well-displayed lip.

BARON BRUNO SCHRÖDER showed *Brasso-Laelio-Cattleya maculata* (*B.-L.-C. The Baroness* × *L.-C. Thvone*).

W. R. FASEY, Esq., showed a fine form of *Cattleya Enid alba*.

R. G. THWAITES, Esq., Chessington, Streatham Hill, showed three forms of *Cattleya Bellona* (*Dowiana* × *Maggie Raphael*), also *Sophro-Cattleya Blackii*.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), H. S. Rivers, Owen Thomas, Ed. Beckett, W. Pope, S. B. Dicks, P. D. Tuckett, W. Bates, E. A. Bunyard, G. P. Berry, W. H. Divers, W. Wilks, H. Markham, S. T. Wright, Geo. F. Tinley and A. W. Metcalfe.

Several seedling Apples were submitted for awards. One named *Ketton Beauty*, shown by Messrs. WM. AND J. BROWN, Peterborough, was considered of sufficient merit to be submitted on another occasion, as was also the variety *Sunrise*, a fruit of fine appearance and very juicy. The secretary was asked to remind the sender of the latter that a variety named *Sunrise* was already in cultivation, and that a new name was necessary. *Ketton Beauty* is of the James Grieve type and has good flavour, but its season was over, the flesh being mealy. Excellent fruits of *Belle de Boskoop* Apples were sent by Mr. MAURICE GAY from his nursery in the Rhone Valley at Sion, Switzerland. Mr. BUNYARD stated that they were a sample of a splendid crop of this variety which he saw this season at Sion. (Silver Banksian Medal.)

A Gold Medal was awarded to Messrs. BARR AND SONS for a magnificent collection of vegetables arranged with great skill. The modern style of utilising a stand with a tall back on which was a number of kinds on brackets, was adopted, and the display was made additionally attractive, from the spectacular point, by clever blending of coloured subjects, and the utilisation of pot plants of Chilies in fruit. The vegetables represented good types of almost everything in season, the more prominent subjects being *Giant Winter* and *Prizetaker* Leeks, *Flat Exhibition* and *Ailsa Craig* Onions, *Tall Red Celery*, *Improved Telegraph* Cucumbers, *King Edward* Potatoes, *Dell's Crimson-Leaved* and *Cheltenham Green-Top* Beets and *New Red Intermediate* Carrots.

NATIONAL SWEET PEA.

THE large attendance at the annual general meeting of this Society, held recently at the offices of the British Florists' Federation, was evidence of the revived interest which is being taken in the name flower of the Society. Mr. B. Peyman presided. After the usual business had been disposed of, the annual report and financial statement for 1920 were presented. From the former we gather that the membership has increased, and that the Society held a successful trial of Sweet Peas at Boyton Hall, and an excellent exhibition at Birmingham on July 23. Four of the Society's challenge trophies have been won outright, and efforts are being made to obtain others of equal value. Mr. Christy is unable to continue the trials at Boyton Hall, but the Committee has been able to make arrangements for holding trials in 1921 at the University College Gardens, Reading, under the superintendence of Mr. A. Cobb. The financial statement showed that there is a balance in hand of £21 4s. 11d., but to carry on its work during 1920, the Committee had to sell some of its investments in War Bonds. It should be pointed out, however, that the assets amount to £169 3s. 5d. above the liabilities. Thanks were accorded the President, Mr. Peyman, the Chairman, Mr. Bridgeford, and other officers and members of the Committee for services rendered during the year. Mr. Leonard Sutton was elected President for 1921, and Mr. Charles H. Curtis Chairman of the Committee. Mr. E. Sherwood, the Treasurer, Mr. R. Gluyas, the Auditor, and Mr. H. D. Tigwell, the Secretary, were all re-elected. The report of the Floral Committee was accepted, and the members were thanked for their work. It is hoped that in 1921, its coming of age year, the Society will be able to hold a large and important exhibition at Vincent Square on or about July 12. A resolution was passed altering the rule regarding subscriptions, consequently, in future, the annual minimum subscription will be 7s. 6d. instead of 5s., and the affiliation fee 15s. instead of 10s.

NATIONAL CHRYSANTHEMUM.

MANY years have passed since the N.C.S. held such a splendid exhibition as the one which filled the larger part of the Royal Horticultural Hall, Westminster, on November 2. Competition throughout was of the keenest order. The flowers were of exceptionally high quality and the competitors numerous. The exhibition was opened by His Excellency Baron Hyashi, the Japanese Ambassador, who was welcomed by Sir Albert Rolit, the N.C.S. president. His Excellency expressed his pleasure at being present, and said he was surprised at the size and variety of the Chrysanthemums. He was the more pleased to come because the Chrysanthemum—the Golden Flower—was one of the great emblems of purity, force of character and chivalry in Japan.

The hall was crowded during the greater part of the day, so much so that it was almost impossible to move at some periods, the people standing in solid masses. The presence of the staging for the Mayflower pageant occupied considerable space at one end of the hall, and consequently limited the area available for exhibits and visitors. In many instances Chrysanthemum exhibits were unduly crowded; indeed, properly spaced, the Chrysanthemums alone would have filled the hall.

AWARDS.

FIRST-CLASS CERTIFICATES.

Chrysanthemum Mrs. Spencer Chichester.—This is a big, exhibition-sized incurring Japanese variety of primrose yellow colour, with a faint greenish-yellow shading. The blooms were splendidly grown and of fine form. Shown by Mr. W. HALL, Embley Park Gardens, Romsey.

Chrysanthemum Pourpre Poitevine.—A handsome, dark crimson reflexing Japanese variety of medium size, with a curious purple sheen—or, as ladies would describe it, shot with purple. Shown by Messrs. W. WELLS AND Co., Mersham.

Chrysanthemum Huntman.—A gloriously coloured reflexing Japanese variety of large market size. The colour is rich chestnut red with golden reverse. Shown by Messrs. W. WELLS AND Co.

Chrysanthemum Miss Margaret Davis.—This charming sport from Portia has large crimson-red bloom of splendid form. It is a most effective single variety. Shown by Messrs. CRAGG, HARRISON AND CRAGG, Heston, Hounslow.

COMMENDATIONS.

Chrysanthemum Madame H. Forcay.—A moderate-sized Japanese variety of rosy anemone colour. This colour will appeal to a few but probably not to the majority of growers. It is, however, very distinct. Shown by Messrs. W. WELLS AND Co.

Chrysanthemum Estelle.—A single variety of fine form and substance; the blooms are borne on long stiff stems, and they are of a clear sulphur yellow colour. Shown by Messrs. W. WELLS AND Co., Mersham.

BLOOMS SHOWN ON BOARDS.

The best of the five exhibits in the Holmes Memorial Class was by T. H. MANN, Esq., whose thirty-six Japanese blooms were of particularly even quality. Not only were the blooms of large size, but they were fresh and well disposed. The very best sorts were Daily Mail, Miss E. Cooper, Miss A. E. Roupe, Mrs. A. Davis, Mrs. R. C. Pulling, Edith Cavell, Charlotte E. Soer, and A. F. Tofield; 2nd, Col. THOMSON, The Manor House, Eppingham (gr. Mr. D. Barnard), whose best were of Mrs. R. C. Pulling, Miss A. E. Roupe, Edith Cavell, Mrs. A. Davis and Master Rex; 3rd, A. McCOLL, Esq., Abbeyfield, Bickley (gr. Mr. E. Dove).

Sir WM. CAIN was first in the class for twenty-four Japanese blooms, and his collection was characterised by unusually good colouring. The best were Mrs. Geo. Monro Junr., Edith Cavell, His Majesty, Dawn of Day, and Princess Mary; 2nd, L. E. CHALMERS, Esq., Farrants, Bickley (gr. Mr. A. B. Hudd), who excelled with Mrs. Algernon Davis, Princess Mary, Mrs. R. C. Pulling and Alec Hervey.

Class three required eighteen Japanese blooms

in six varieties of distinct colours. The 1st prize was won by Mrs. H. FELLOWS, Tangley Park, Worpleston (gr. Mr. C. Hebborn), with a magnificent collection. The blooms of Louisa Pockett, R. C. Pulling, and Mrs. A. Davis were superb. 2nd, The Duchess of ALBANY, Claremont, Esher (gr. J. Kelly), who had excellent blooms of Dawn of Day, Mrs. R. C. Pulling and Mrs. J. Gibson; 3rd, Sir WM. CAIN, Wargrave Manor, Berks (gr. Mr. C. Moore).

The class for twelve Japanese blooms induced a great competition, and the order of merit ran high. The 1st prize was won by Mrs. JARY, Bettesswill Hall, Lutterworth (gr. Mr. A. Graham), who had a wonderfully fine set of blooms: Louisa Pockett, Mrs. G. Drabble, Charlotte E. Soer and Princess Mary were superb; W. H. ALLEN, Esq., Bromham House, Bedford (gr. Mr. H. Blakeway), was a very good second. His best blooms were Mrs. W. Holden, Thos. Lunt, and Princess Mary.

The general quality was equally high in the class for six blooms, and the flowers shown by Mr. E. H. PEARCE, Lord Wandsworth Agricultural College, who won the 1st prize, were of immense size. The varieties were W. Rigby, H. F. Tofield, Mrs. W. Sargent, W. Turner, Mrs. R. C. Pulling and Mrs. Algernon Davis; 2nd, W. H. ALLEN, Esq., who had a magnificent bloom of Mrs. R. C. Pulling; 3rd, Mrs. JARY.

The Holmes Memorial Challenge Cup for twenty-four incurved varieties was won by L. E. CHALMERS, Esq., with a particularly meritorious collection. He had very shapely blooms of Romance, Miss Thelma Hartmann, Pantia Ralli and Clara Wells; 2nd, H. MARTINEAU, Esq., The Lodge, Holyport, Maidenhead (gr. Mr. J. H. Higgs). L. E. CHALMERS, Esq., also had the best twelve and six incurved blooms; his specimens, Golden Glory, Buttercup and Clara Wells, were excellent. H. MARTINEAU, Esq., was 2nd in the class for twelve varieties, and Mr. G. MORREY was 2nd with six blooms.

BLOOMS SHOWN IN VASES.

The William Wells Memorial Prize, which requires twelve varieties, three blooms of each, in vases, was won by F. H. MANN, Esq., Trulls Hatch, Rotherfield (gr. Mr. A. Jewell), with a magnificent collection. The blooms were of large size, fresh and clean. The varieties of Mr. Keith Luxford, James Stredwick, Edward Jones, Mrs. G. Lloyd Wigg and Lady Talbot all possessed unusual depth as well as great breadth. 2nd, ED. MAINWARING, Esq., Elm Lodge, Dulwich (gr. Mr. A. Winter), who had fine blooms of Queen Mary, Princess Mary, General Petain and Mrs. R. C. Pulling; 3rd, R. BARBER, Esq., Southwood, Bromley (gr. Mr. J. Bedson).

The best three white Japanese blooms were of Wm. Turner by Col. THOMSON; 2nd, Mr. E. H. PEARCE, who, showing Wm. Rigby, was first for three blooms of a yellow variety; 3rd, Major DALGELY.

Mrs. Algernon Davis was the favourite variety in the class for three blooms of any variety other than white and yellow, and the best exhibit was shown by W. H. ALLEN, Esq.

The George Monro, Junr., Challenge Cup (see Fig. 108) brought out a most gratifying competition. There were eight exhibits of twelve vases of large singles, and the judges experienced considerable difficulty in awarding the prizes, so even were the merits of the first three. The 1st prize was awarded to L. E. CHALMERS, Esq., who showed Sandown Brilliance, Mrs. H. J. Jones, Phyllis Cooper, Alberta, Jessica, Mrs. W. F. Smith, Molly Godfrey and Coronet; 2nd, E. MAINWARING, Esq., whose outstanding vases were of Bronze Molly Godfrey, Sweet Auburn and Isobel Felton; 3rd, F. J. YARROW, Esq., St. John's Wood.

The best display of singles was by Mr. G. MORREY, who used typical varieties to good effect; 2nd, Mr. H. RUNCIMAN, who was the only exhibitor of Anemone singles.

Mr. LOO THOMSON won the first prize with six splendid vases of large singles, those of Bertha Fairs and Mrs. W. J. Godfrey were excellent.

In the class for twelve vases of singles L. E. CHALMERS, Esq., was 1st with as good blooms as

those with which he won the Monro Cup; 2nd, Mr. LOO THOMSON.

Mr. J. W. HUSSEY, Matford Lodge, Exeter, won both 1st prizes for Pompons, his disbudbed blooms being especially good. He showed Black Douglas, Prince of Orange, Wm. Westlake and Lelah.

DECORATIVE CLASSES.

There were three dinner-table decorations of Chrysanthemums and foliage. The first prize was won by Mrs. J. CLARK, South Chingford, with a neat arrangement; 2nd, Mrs. WELLS.

The three vases of large singles were not particularly successful. Mr. W. J. DAY, Walthamstow, the only exhibitor, was awarded the first prize.

The vase of single Chrysanthemums which won the first prize for Mr. A. ROBERTSON, St. John's Wood, was an imposing and ornamental arrangement. Mr. ROBERTSON was also awarded first prize for a splendid vase of large-flowered exhibition blooms; 2nd, Mr. E. H. PEARCE, Long Sutton, Basingstoke.

There was little to choose between the two baskets of Chrysanthemums, but the first prize was awarded to Mr. A. S. PORTER, St. Albans; 2nd, Mr. W. J. DAY, Walthamstow.

AMATEURS' CLASSES.

In the amateurs' classes the quality was decidedly better than might have been expected, and in most instances the competition was keen. The best twelve Japanese blooms were shown by Mr. T. CLARK, South Chingford, who staged a collection of very large flowers; 2nd, R. BARBER, Esq., Mr. J. H. GODDARD, Belgrave, Leicester, had the best six Japanese blooms, and Mr. C. HAWKINS, Kingston, was a good 2nd.

The class for three vases of Japanese blooms resulted in keen competition, and there was very little to choose between the first three exhibits, which were all of great excellence. Mr. T. CLARK was 1st, Mr. J. H. GODDARD 2nd, and Mr. B. CARPENTER 3rd.

Mr. W. J. DAY, Walthamstow, had the best six vases of singles, and Mr. LOO THOMSON the best three.

Mr. W. J. DAY, with a very decorative arrangement, was first with a large vase of mixed Chrysanthemums; 2nd, Mr. J. VANSTONE, who had the best bowl of Chrysanthemums. Mr. DAY, with a pleasing arrangement, was first in the class for a vase of single varieties.

The competition for the Affiliated Societies' Challenge Trophy suffered from the great difficulties of the times, but the two exhibits were fairly representative of the various types of Chrysanthemums. The Trophy and first prize were won by the Surbiton, Kingston, The Dittons and District Society, with a creditable display of the decorative varieties; 2nd, the Finchley and District Society, with a similar display.

In the amateurs' decorative classes the best vase of five Japanese blooms were of Mrs. R. C. Pulling by Mr. WM. BUCHELL, South Tottenham; 2nd, Mr. JOHN BEDSON, Bromley, with the same variety.

NON-COMPETITIVE.

A large and boldly arranged group set up by Mr. H. J. JONES, Rycroft Nursery, Lewisham, was a great feature of the show. Nine enormous sheaves of big blooms formed a background. As some of these contained two dozen exhibition blooms, some idea of the extent of exhibit will be gained. In front were specimen blooms and bowls and vases of medium-sized varieties as well as singles. A few outstanding varieties were W. Rigby, Princess Mary, Queen Mary, Miss G. Monro, Mrs. G. Drabble, Formidable, and Peace, all big Japanese sorts; and Phyllis Cooper and Sandown Radiance, singles, associated pleasingly in elegant baskets. (Large Gold Medal.)

Mr. NORMAN DAVIS, Framfield filled a large corner of the hall with a beautiful exhibit of splendid blooms, most tastefully arranged. The display was on the ground level, but every variety, no matter how boldly massed, was easily seen, as crowding had been carefully avoided. A few especially fine varieties were: Mrs. Algernon Davis, Wm. Turner, Mrs. George Monro, Majestic, and Framfield Glory (Gold Medal).

Messrs. WELLS AND Co., Mersham, pro-

vided a grand display of Japanese, single and incurved varieties, arranged in bold masses in large vases and stands. Huntsman, Golden Champion, Pourpre Poitevine, Edith Cavell and Sorcerer, were notable Japanese varieties; while Phyllis Cooper, Max, Bronze Molly, Bertha, were conspicuous among singles (Gold Medal).

Mr. KEITH LUXFORD, Harlow, contributed a large and attractive exhibit just inside the entrance. Nine big sheaves of large Japanese blooms formed a fine background for single, pompon, reflexed and Japanese sorts in great variety. Some notable sorts shown were Keith Luxford, Phyllis Cooper, Mensa, Mrs. J. Balmer, Mrs. H. E. Dixon and Claribel (Gold Medal).

Messrs. GODFREY AND SON associated Scabiosa caucasica varieties and a few other border flowers with their collection of Chrysanthemums. Of the autumn flowers the single varieties predominated and included such valuable sorts as Topsy, Bronze Molly, Phyllis Cooper, Beatrice and Loo Thompson (Silver Gilt Medal). Messrs. J. W. COLE AND SON, Peterborough, contributed a group of medium-sized Japanese and single sorts in great variety (Silver Medal). Mr. W. HALL, Embley Park Gardens, Romsey, showed a few very fine Japanese blooms representing new seedlings (Bronze Medal).

Obituary.

J. R. JACKSON, A.L.S., late keeper of the Museums of Economic Botany, Royal Gardens, Kew, a highly-esteemed Kewite, died on the 28th ult., at his residence at Lymington, S. Devon. John Reader Jackson was born at Knightsbridge in May, 1837. When he was about six years old the family removed to Canterbury in order to be nearer his maternal grandfather, who had a farm near Ramsgate. His early education was undertaken by his father, but later, in the memorable year of 1851, he was sent to London, where, under the care of an uncle, he continued his studies. The years spent in Canterbury greatly influenced his mind in matters religious and artistic, and the architectural beauties of the Cathedral and other ancient buildings engendered the desire to become an architect, but it was necessary for him to obtain a lucrative post at once. Eventually, in 1858, through the influence of his friend Prof. Bell, who introduced him to Sir William Hooker, Robert Brown, John Lindley, and various other eminent men, he was given charge of the museums at Kew, then in their infancy. This post he held and carried on alone for nearly 20 years and then with one assistant, Mr. Hillier, who succeeded him as keeper on his retirement in 1901. In spite of the little time he had for literary work, Mr. Jackson contributed numerous articles on economic botany to *The Technologist*, the *Pharmaceutical Journal*, the *Gardeners' Chronicle* and a number of other periodicals. In 1877 he edited a new edition of Barton and Castle's *British Flora Medica*, and in 1890 he produced one of his most valuable works under the title of *Commercial Botany of the Nineteenth Century*. Hundreds of Kewites are indebted to him for a grounding in economic botany and will gratefully remember his kind manner in lecturing and his careful correction of their notebooks. The writer of this appreciation counted him as one of his most valued friends ever since 1860. All who came into personal contact with such an esteemed colleague were filled with admiration of his gentle, pure and unselfish character. During his long residence in Richmond Mr. Jackson was actively engaged in the various charitable and educational works connected with St. John's Church, where he also served for many years as warden. Mr. Jackson was elected an Associate of the Linnean Society so long ago as 1868, and was the "Father" of the Associates at the time of his death. Mr. Jackson was one of three original officials of Kew, namely, Prof. Daniel Oliver, Dr. J. G. Baker, and himself. They have all three passed away within the past two years, between the ages of 80 and 90. W. Botting Flemley.

J. C. PARKER.—We regret to record the death of Mr. J. C. Parker, for 28 years gardener at Broxbournebury, and eight years gardener at High Leigh, Hoddesdon, in the service of R. Barclay, Esq. Deceased was well known in the Broxbourne and Hertford districts. He was a gardener of the old school, and a keen cultivator of stove and greenhouse plants. He was a widower and leaves one daughter; his two sons were killed in the war.

Mdme. Gabriel Debrie.—We regret to learn from our contemporary, *L'Horticulture Française*, of the death of Madame Debrie, the wife of M. Gabriel Debrie, florist, of the Maison La Chaume, rue Royale, Paris. The deceased lady was highly esteemed in the horticultural world and was an Officier d'Académie and a Chevalier of the Mérite Agricole. The interment took place in the cemetery of Marly-le-Roi, in the family vault there. The hearse was covered with wreaths from friends, the employees of the Maison La Chaume, and others, including some of the leading florists societies. The National Horticultural Society of France was largely represented among the mourners—MM. Truffaut, senr., Châtenay, Vacherot and others being among them. The deceased lady was in her 68th year.

ANSWERS TO CORRESPONDENTS.

CLIMBERS FOR PLANTING OUTSIDE A CONSERVATORY.—For the north side we should recommend *Pyracantha Lalandi*, *Garrya elliptica*, *Jasminum nudiflorum*, *Vitis Cœnietiae*, *Clematis montana*, and *Forsythia suspensa*. For the south side there is a wider range of choice, viz., *Escallonia macrantha*, *E. Philippiana*, *Clematis* in variety, *Wistaria*, *Climbing Roses*, *Cydonia japonica*, *Myrtle*, *Honeysuckles* and *Passiflora coerulea*. In addition, the small-leaved and variegated *Ivies* may be used in either position. For the low wall the best evergreen is *Cotoneaster microphylla*, which is slow growing and very effective with its small, shining leaves and red berries.

EVERGREEN HEDGE: J. B. We do not recommend either *Cupressus* or *Thuja* as hedge plants for the bleak, exposed position you refer to. Holly and Yew are by far the best plants for the purpose, but are slow-growing and somewhat expensive to start with. A cheap and effective hedge may be formed with common Laurel (the form known as *rotundifolia* is the best) or English Privet (not the oval-leaved kind). This common or English Privet (*Ligustrum vulgare*) makes a thick, impenetrable hedge, is thoroughly hardy anywhere, and easily kept in order.

FORCING DAFFODILS, HYACINTHS, TULIPS, ETC.: J. E. W. The successful forcing of the bulbous plants named depends on many things and not a little on the varieties employed. Of the Daffodils, Golden Spur is best suited to early forcing, ornatus and Emperor doing better later and in that order. As you have had no previous experience you had best proceed cautiously. Potted or boxed in September or early October Golden Spur could be introduced into the greenhouse in the third week of November, a temperature of 45° or 50° being ample for the first fortnight. The others may be housed three weeks later. Essentials to success are abundant supplies of moisture at the roots and a moisture laden atmosphere. Stand the receptacles on a cool ash bed or stage near the glass. Do not use bottom heat, it is harmful and often fatal to success, while invariably retarding in effect. Arrange the plants where they will receive the fullest amount of light. Increase the temperature to 55° after the first fortnight; this should finish the crop well. Do not attempt to maintain the temperatures named during fog or continued severe frost. At such times plant activity is virtually suspended and a lower temperature is safest. *Narcissus ornatus* resents being forced either early or hard, and for this variety a more gradual process is best.

The miniature Hyacinths—we take it you do not mean Early Romans—should not be forced for Christmas; a month later would be safer for them. As to the Tulips, singles are best for early use, and only certain varieties respond well. The best are La Reine, Yellow Prince and White Hawk. Essentials to success in their case are a bottom-heat of 60° or 70°, darkness, a certain measure of humidity and watering with tepid water. Few plants that are forced early are more susceptible to change than these. Exposure to fog while in the half-grown, flower-bud stage is at times ruinous. Plunging them in fibre in a darkened frame within the house is the best treatment for these and for Lily of the Valley. Both may be forced on a hot-bed supplying bottom-heat when taken into the greenhouse without any intermediate preparation; the temperature of the house should be 60° at the start. Bottom-heat, darkness and humidity promote stem growth in these plants, and a good length of stem is of high importance in blooms used for decoration. To engage successfully in the early forcing of bulbous plants it is of the highest importance that only certain varieties should be grown. Planting the Spanish Irises and early *Gladiolus* in frames would assist a somewhat earlier flowering—a few days in advance of their natural flowering period in the open. It should be remembered, however, that from France and the Channel Isles such subjects appear in all English markets in an almost unbroken succession weeks in advance of home-grown supplies, the latter frequently coming into competition with Dutch grown produce. The frames should be in a sunny position. A not infrequent error when growing these crops in frames is that insufficient water is applied, the cultivator overlooking the fact that he has excluded the rain from the plants. It is time both crops were planted. We know of no book likely to be of any assistance to you.

HORTICULTURAL INSTRUCTORSHIP: S. B. Seeing that you have a training in both the practice and science of gardening, your qualifications should fit you for a post as horticultural instructor. Such appointments are, however, few, but advertisements for horticultural instructors appear from time to time in *The Gardeners' Chronicle*.

MANURE FOR ASPARAGUS AND STRAWBERRIES: North Devon. As soon as you have removed the old top-growth from the Asparagus bed prick up the surface very lightly, and apply a moderate layer of well-decayed dung. Early next spring dress the surface with a mixture of 8 lb. of kainit and 6 lb. of superphosphate per square rod, or, if you prefer, employ fish guano at the rate of 3½ lb. to 7 lb. of common salt per square rod. A dressing of nitrate of soda is also beneficial. This should be applied early in the summer at the rate of 1 lb. per square rod, repeating the dressing at intervals of three weeks on two occasions. Strawberries are best stimulated by mulchings of long, strawy manure applied at the end of April, and this may be supplemented by superphosphate at the rate of 2 lb. per square rod. A little nitrate of soda is a good stimulant if applied just before the plants come into flower.

NAMES OF PLANTS: L. S. Ainsworth. The *Michaelmas Daisy* is probably *Aster hyssopifolius*, but the specimen was too scrappy and withered for accurate determination.—B. T. 1. *Aster Novi Belgii* Wm. Marshall; 2. *A. Novae Angliae pulchellus*; 3. *A. Amellus* variety; 4. *A. Novae Angliae*; 5. *A. N. B.* variety; 6. *A. N. A. rubra*; 7. *A. paniculatus* variety; 9. *Aster*, too withered for identification; 10. *A. N. B. Lavender*. No other *Asters* reached us. The *Roses* had fallen to pieces.

Communications Received.—H. E.—M. P. A.—L. E. M.—H. G.—K. F., Kristiania—J. B.—A. W.—A. P.—A. S.—T. L.—T. A.—J. G. E.—F. B.—E. K.—F. T.—E. M. R.—A. D. W.—H. R. D.—A. B.—F. W. M.—E. W. F.—J. P.—J. R.—J. W.—L. R. A.—J. C. S.—F. L.—T. J. H.—C. C.—A. C.—E. N. C.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 42.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, November 10. 10 a.m.: Bar. 30.35, temp. 55°. Weather—Fine.

The Vegetation of the Sandwich Islands.

OF the islands of the globe those of the Sandwich or Hawaiian group are the most isolated. The nearest considerable land surfaces are over 2,000 miles away—San Francisco is 2,100 distant from Honolulu, Samoa 2,263 and Yokohama 3,445 miles. As is to be expected, this extreme measure of isolation has resulted in the development of a flora remarkable for its peculiarities and for the high percentage of endemic forms. The most recent description* of the general features of the vegetation of the Sandwich Islands is that of Messrs. A. S. and A. E. Hitchcock, who visited the chief islands of the group in 1916. The situation and geographical features of the islands lead to great differences of climate, for, although strictly tropical, it is tempered by the surrounding ocean, whilst the high mountains, on the summits of which snow persists throughout the year, intercept the trade winds and lead to extreme precipitation on their windward sides. Thus, near Honolulu the annual rainfall at the water front is only 15 inches, whereas in the mountains, to the eastward, it may be so high as 300 inches; and although in other parts of the islands the rainy season is confined to the months intervening between November and March, in the mountains it continues all the year round. The maximum rainfall—600 inches—is at the summit of Waialeale, the highest peak of Kauai (5,170 feet).

Sugar production, Pineapple-growing and stock-raising are the staple industries of the islands. Introduced animals—goats and pigs—have done much damage to the native vegetation, and introduced plants—

Guava and Lantana—have done more. The islands are of volcanic origin, and rise from the ocean floor 18,000 feet deep, whilst the high peaks Mauna Kea and Mauna Loa tower some 13,000 feet above sea level. Of the group, Kauai is the oldest island, and Hawaii the most recently formed, with sheets of lava scarcely yet scoured by time. With such a favourable climate, it is not surprising that Honolulu has become a sort of natural botanic garden, rich in flowering trees and shrubs of foreign origin; street trees of *Cassia nodosa* with racemes of pink and white flowers, *Cassia fistula* with yellow flowers and pods 15 inches long, the Flame Tree, *Poinciana regia*, with masses of scarlet blossoms and naked branches, and the Rain Tree (*Pithecolobium saman*) with vast spread of branches and umbrella form, are common in parks, and everywhere flourishes the Hibiscus, of which Rupert Brook has written so entertainingly. Hedges are commonly made of *Acalypha Wilkesiana* and of *Nathopanax guilfoylei*, and some times of the *Croton—Codiaeum variegatum*. One of the imported trees, *Prosopis juliflora*, has proved a blessing to the islands, having re-established itself and colonised the arid belts on the lee sides of the mountains. Economically the tree has proved of great benefit as a source of honey and as food for stock, its pods being eagerly eaten by all kinds of domestic animals. On the other hand, *Lantana Camara*, another introduced plant, has proved itself here, as elsewhere, an unmitigated nuisance, driving out native vegetation and yielding no benefit to man. Of the grasses now prevalent in the islands, some are endemic, as, for example, species of *Eragrostis* and *Agrostis sandwicensis*. Of native trees the commonest is *Metrosideros polymorpha*, which ranges from the size of a shrub in the mountains to that of a great tree in the middle forest zone. Its white, furrowed bark and scarlet flowers make it a striking object, and economically its timber finds many uses, as, for example, for paving blocks and railway sleepers. Another native tree, *Acacia Koa*, is abundant and useful. It exhibits the dimorphism of leaf not uncommon in the genus; the young leaves and that of vigorous old shoots are twice pinnate, and those of the normal, mature shoots are reduced to flattened, leaf-like phyllodes. *Aleurites moluccana*, with leaves not unlike those of the Castor Oil plant, is of common occurrence, and furnishes nuts rich in oil. Known in British colonies as the Candleberry or Candle-nut tree, this species is of wide range in Polynesia and tropical Asia. *Dracaena aurea* is a xerophyte of the dry lava districts, and *Pandanus odoratissimus*, a Screw Pine with red or orange fruits, form forests in some parts of the islands. Of native trees which are on the verge of extinction, *Kokia* (?) *Rockii* (Native red Cotton) is noteworthy, by reason of its magnificent, Hibiscus-like, red flowers. Comparatively few individuals of this endemic species remain, and cattle are gradually destroying them. Another species which has been actually extinguished as a native is *Kokia drynarioides*, but fortunately seed was saved from the last specimens, and from it seedlings have been raised. Of *Hibiscadelphus Giffardianus* a single specimen remains; of *H. Wilderianus* also one; of *H. hualalaiensis* about one dozen; cattle being in each case the agents of destruction.

Of dominant families the Lobeliaceae is among the most striking, with over 100 species belonging to six genera. The prevailing form of these Lobelides is Palm-like, and in some the trunk is so much as 40 feet high. Probably the most remarkable Hawaiian plant is the Silver Sword, *Argy-*

roxiphium sandwicense. The tuft of narrow, stiff, sharp-pointed leaves, about 1 foot long, is covered by a silvery white, close wool, from the centre of which springs the flower stalk bearing flowers with yellow centres and purple rays. From a distance groups of this plant look like a flock of sheep. The Hawaiian flora is remarkable not only for that which it has, but for that which it has not. Orchids are all but absent, being represented by only three species belonging to as many genera, and all are rare, inconspicuous and terrestrial forms. Palms are represented by only some ten species of *Pritchardia*; the characteristically tropical family, *Melastomaceae*, is unrepresented, and the great family of the *Compositae* has but few native species, and so has the *Labiatae*, and there are no Mangroves.

Honour for Mr. James Kelway.—Mr. James Kelway, of Messrs. Kelway and Son, Langport, Somerset, has been appointed a Justice of the Peace for the County of Somersetshire. Mr. J. Kelway is a member of the Langport Rural District Council and Chairman of the Highways Committee; a member of the Grand Council of the Federation of British Industries and of the Wholesale Seed Growers Committee of the Chamber of Horticulture. Mr. Wm. Kelway, the senior partner, is also a Justice of the Peace as well as Councillor for the County of Somerset, consequently both father and son become fellow magistrates for the same Petty Sessions.

Retirement of Mr. R. G. Waterman.—We regret to learn Mr. R. G. Waterman, who is well known in the Liverpool district, has been compelled to retire from the position of secretary and treasurer to the Wootton Gardeners' Mutual Improvement Society, on account of ill-health. Mr. Waterman has been connected with the society ever since its formation thirty-two years ago, and for the past twenty-five years has held the office of secretary and treasurer. He has worked hard for the society, and it is chiefly due to his energies that it occupies its present important position.

Important Discovery in the Cause of Isle of Wight Bee Disease.—Dr. Rennie, of Aberdeen University, in collaboration with Miss Elsie J. Harvey and Mr. P. Bruce White, have brought to a successful issue the investigation into the cause of Isle of Wight disease in bees, which has caused extensive destruction to stocks throughout the country. The cause of the disease is believed to be a minute mite of a new species, which it is proposed to call *Tarsonemus Woodi*, thus perpetuating the name of Mr. A. H. E. Wood, of Glassel, Aberdeenshire, a public-spirited bee expert, who has generously subsidised the recent extension of the investigation which for the past seven years has centred in Aberdeen University. The mite enters the breathing tube of the bee and blocks the air passage, thus cutting off the supply of oxygen from certain muscles and nerve centres concerned with locomotion. Isle of Wight disease first became known about 1904, and gradually spread from the south of England to the north of Scotland.

Reclamation of Waste Land.—In view of the increasing population in England and the imperative necessity that this country should in the future be more self-supporting in the matter of food than in the past, few subjects are of more vital importance than that of the Reclamation of Waste Land. The Association of Economic Biologists, presided over by Sir David Prain, discussed this problem at their meeting in the Botanical Department of the Imperial College of Science on Friday, November 5th, and the addresses were fully illustrated by lantern slides. Professor F. W. Oliver considered the question of reclamation by botanical means, and Dr. E. J. Russell that of reclamation by agricultural means. The former devoted his attention primarily to the reclamation of salt marshes and other maritime tracts, showing the manner in

* "Floral Aspects of the Hawaiian Islands," by A. S. Hitchcock, *Annual Report of the Smithsonian Institution*, 1917, p. 448.

which this process occurs slowly in nature through the accreting activities of certain ordered successions of plants, and then indicating how such action might be accelerated and made of immediate practical value by the wise interference of skilled botanists. The paucity of our knowledge concerning the ecology of strand-building plants was emphasised and the great need for the establishment of experimental stations for the study of these problems pointed out. Dr. E. J. Russell considered the reclamation of inland tracts of country such as moor and fen, sandy commons, etc., and lands deficient in particular mineral constituents. Each class of waste land was discussed in turn, with illustrations aptly drawn from a wealth of personal experience, and the different procedures to be adopted in the several cases described. Professor Farmer, Dr. Voelcker, Mr. Lobjoit, Dr. Salisbury, Mr. Bernard Davis and Sir David Prain took part in the discussion.

The Chrysanthemum as a Link in Anglo-Japanese Friendship.—As stated in our issue of November 6 (p. 235), the annual exhibition of the National Chrysanthemum Society was opened by His Excellency the Japanese Ambassador, Baron Hayashi. The President of the Society, Lt.-Col. Sir Albert Rolitt, presided, and there was a crowded attendance. We now add that in welcoming Baron Hayashi, Sir Albert Rolitt said "The Golden Flower" came to Europe from India through Japan and China, and the centenary of its introduction was celebrated in 1890. The chief varieties were the Japanese, and the diplomatic representatives of Japan had always taken a kindly interest in the National Chrysanthemum Society. Japan had always accredited to us her ablest statesmen—Viscount Kato, the Marquis Inouye, Viscount Chinda, and Baron Hayashi, hence largely sprung the Anglo-Japanese alliance, an alliance which had been a great contribution to the ultimate victory of the Allies. It was pleasant, therefore, to be able to reflect that since so long ago as 1873 he had been an advocate of the policy of close friendship and co-operation between the two nations, and had actively helped in that earliest stage when Lord Salisbury, as Foreign Secretary, recognised the substitution of Japanese tribunals in place of Foreign Consular Courts, thus acknowledging the right of Japan to administer justice for all peoples, native and foreign, in her own tribunals. The war had hindered the development of the N.C.S., but the present show was a magnificent floral display and the exhibits amply deserved the many generous awards made. His Excellency then congratulated the Society on its splendid exhibition, and expressed the great interest and pleasure the diplomatic representatives of Japan showed in the culture of Japanese horticultural products. He heartily reciprocated the friendly expressions of the President and it was with the greatest satisfaction he declared the exhibition open, and wished success to the National Chrysanthemum Society as a link in Anglo-Japanese friendship and alliance.

Autumn Flowers at Colesborne, Cheltenham.—Mr. H. J. Elwes writes: "The unusually open autumn has left many plants in flower later than usual. On October 28 I found the following, some of them in quite good condition in my garden:—*Romneya trichocarpa*, *Euphorbia sikkimensis* (a little-known but a hardy and ornamental plant which I raised from Sikkim seed), *Asteriscus maritimus*, *Veronica spicata rosea*, *Poterium tenuifolium album* (a very graceful border plant), *Tradescantia virginiana alba*, *Cheiranthus linifolius*, *Campanula garganica birsuta*, *C. muralis*, *Polygonum vacciniifolium*, *P. amplexicaule*, *P. campanulatum*, *Lobelia siphilitica rosea*, *L. cardinalis*, *Linum flavum*, *Cytisus Heuffelii*, *Dracocephalum Forrestii*, *Erodium supracranium*, *Morina longifolia*, *Daphne hybrida*, *Cistus rosmarinifolius*, *Lithospermum prostratum*, *Gentiana Lawrencei* (this, though not quite so beautiful as *G. Farreri*, is a much better grower on my soil, and so like *G. Farreri* that I can hardly believe in its specific distinction), *Iberis gibraltarica*, *Argemone mexicana*, *Aster Thompsonii*, *Helianthemum lunulatum*, *Erodium olympicum*, *Veronica Hanburyi*, *Potentilla aurea*, *Androsace lanuginosa*, *Geranium Endressii*,

Hemerocallis (sp. from Japan, like *flava*), *Kniphofia modesta*, *K. Nelsoni*, *K. Quartiniana*, *Alströméria Pelegrina*, *A. Hookeri*, *Amaryllis Belladonna Parkeri*, *Nerine Bowdeni*, *Cyclamen hederacifolium* and varieties, *Crocus* (many species), *Clematis flammula tenuifolia* (a pretty and most floriferous species), *Gladiolus princeps*, *Caryopteris Mastacanthus*, *Schizostylis coccinea*, and *Sternbergia lutea*."

The Relations of Astronomy to Botany.—Three popular lectures on "The Relations of Astronomy to Botany," illustrated with experiments, models, diagrams, and specimens, will be delivered by Prof. A. W. Bickerton, A.R.S.M., President of the London Astronomical Society, on the 15th, 18th, and 23rd inst., in the Museum, Royal Botanic Society's Gardens, Regent's Park.

Appointment at Edinburgh University.—Mr. J. R. Matthews, M.A. (Edin.), F.L.S., younger son of Mr. R. Matthews, Duncrub, Dumfries, and brother to Mr. E. Matthews (whose portrait we gave last week), has been appointed First Assistant to Sir Isaac Bayley Balfour, Professor of Botany, Edinburgh University. Educated at Perth Academy and Edinburgh University where he graduated as M.A., he specialised in Botany and was appointed lecturer on botany in Birkbeck College, London, and after writing various monographs which were printed in the *New Phytologist*, he was elected a Fellow of the



MR. J. R. MATTHEWS, APPOINTED FIRST ASSISTANT IN BOTANY AT THE EDINBURGH UNIVERSITY.

Linnaean Society. At the outbreak of War Mr. J. R. Matthews was appointed by the Government Committee dealing with dysentery a member of the Dysentery Research Staff, and had as his headquarters the Liverpool School of Tropical Medicine. The work done by him and other members is summarised in the publications of the School, Vols. X, XI, and XII. Of ten publications three are devoted to the work of Mr. Matthews acting alone, and the rest deal with his work in collaboration with other scientists. He remained on the staff of the Research Committee until June, 1919, when he returned to his duties at the Birkbeck College until his appointment to Edinburgh.

Mr. W. H. Neild's Appointment to Long Ashton.—The many friends of Mr. W. H. Neild will learn with great pleasure of his appointment to a position of importance at the National Fruit Station, Long Ashton, Bristol. For the past sixteen years Mr. Neild has been manager of the Duke of Bedford's experimental fruit station, Ridgmont, Bedfordshire, of which Mr. Spencer Pickering has been director since its establishment. In the days before the war, when visiting parties were numerous, Mr. Neild became well known and highly esteemed for his unchanging urbanity, his lucidity in explaining the experiments and their objects, and his readiness in answering the varied and often difficult questions. With the closing of the Duke of Bedford's station Mr. Neild has found a more important sphere in which to labour, and it is certain that his intimate knowledge of fruit will prove of inestimable value to the Long Ashton station itself and ultimately to the nation.

Fine Autumn Weather in Caithness.—We are informed by Mr. Elmer Park, gardener to the Misses Henderson at Rosebank, Wick, Caithness-shire, that delightful weather has been experienced in Caithness throughout the summer. Very little rain fell after the month of June and none at all during October. On November 2 all the summer bedding plants at Rosebank were quite fresh and in full bloom, while Dahlias, Carnations and Sweet Peas were making a fine display, and Roses were flowering quite as freely as during the month of August. A border of Chrysanthemums 16 yards long, containing four rows of plants, has provided a wonderful display ever since the middle of October, which is quite exceptional for a garden so far north. Mr. Park concludes by stating that crops of all kinds have been exceptionally good this season at Rosebank.

Appointments for the Ensuing Week.—Tuesday, November 16.—Royal Horticultural Society's Committees meet. Wednesday, November 17.—Northamptonshire Chrysanthemum Society's Annual Exhibition (three days). Thursday, November 18.—Ayr Chrysanthemum Society's Show; Worcester City and County Chrysanthemum, Fruit, Root, and Honey Society's Show; Brighton, Hove, and Sussex Horticultural Society's Show. Friday, November 19.—Bolton Horticultural and Chrysanthemum Society's Show (two days), at the Town Hall, Bolton; Dunfermline Chrysanthemum Society's Show (two days).

"Gardeners' Chronicle" Seventy-five Years Ago.—*French articles of food, not used in England.*—Maize Flour is prepared as follows in some parts of France, where it constitutes the almost entire food of the peasantry. In a skillet or saucepan half-full of boiling water, dissolve a little salt; whilst the water is boiling fast, sprinkle in Maize flour with one hand, whilst the other is constantly stirring the mixture with a spoon or stick; continue to add flour till the whole becomes a thick paste, then turn it out on a cloth to dry. When cold, it may be cut up in slices like bread; it is generally so eaten, but sometimes whilst still hot. For the tables of the gentry, the paste prepared as above is cut into slices, fried or broiled, and served with powdered sugar.—Haricot Beans are the cheapest kind of food for the poor in many parts of France. They are prepared in the following manner:—Put the Haricots into cold water, boil them gently till the skins begin to crack, then pour away the water, which is always nauseous; have ready boiling water to supply its place, simmer the Haricots gently till tender. They must not be allowed to get cold whilst cooking, or they could never be boiled tender.—Chick Peas:—Soak these 12 to 14 hours in salt and water, then simmer them till tender in the same water. Like Haricots, it is essential that they should never get cool till perfectly cooked.—Buck Wheat is generally eaten in Russia, where it is served daily, from the Emperor to the poorest peasant. In preparing it, put the Wheat, freed from husk, into a jar that will bear the heat of the oven. Add water sufficient to rather more than cover it, put it into a slow oven (adding a little salt), where it should remain three or four hours. The water should be in sufficient quantity to render the grain soft, yet to leave it entire, as rice for curry. The affluent stir butter into the jar when it comes to table. The late Mr. Colquhoun, during the dearth of 1795, suggested the preparation of herrings, pilchards and sprats in a mode which enabled them to be sold in the London market at a very low price. They were slightly salted, and loosely packed in barrels, so as to be brought for food from those parts of the coast where, from their superabundance, they would otherwise have been used as manure. *M. S. B., Hampstead. Gard. Chron., November 15, 1845.*

Publications Received.—*Income Tax Simplified.* By Arthur Fieldhouse and E. Ewart Fieldhouse. M.A. Fifth edition. Huddersfield: A. Fieldhouse, 66, West Parade; London: Simpkin, Marshall and Co., Ltd. Price, 1s. 6d. net. *Some Bee Diseases.* By Joseph Tinsley, B.B.K.A., Bulletin No. 96. The West of Scotland Agricultural College: Glasgow: Robert Anderson, 142, West Nile Street.

OCCURRENCE OF THE LIZARD ORCHIS AND OTHER RARE PLANTS IN BRITAIN.

In the summer of 1920, through the kindness of Mr. F. J. Wall, the discoverer, I was informed of the occurrence of a solitary specimen of the Lizard Orchid (*Orchis hircina*, Grantz), near Oxford. It grew in a field on the coral-line colite, which had been carefully explored by me many times during the last 40 years; therefore the plant is almost certainly of recent introduction. The problem is—what is its origin and how did it reach its present habitat? An answer—which seems to me satisfactory—can be supplied. My friend, Mr. H. Balfour, the Keeper of the University Museum, has for the past ten years grown this among other terrestrial Orchids in his beautiful garden at Headington. He brought the tubers from the Dordogne, and one of his plants grew a metre high. There is great probability that seeds were conveyed to the field by the wind, by insects or by birds. It may be recalled that the seeds of our terrestrial species are infinitesimally small (100,000 weighing only a grain), therefore, wind is more probably the agent of dispersal.

The occurrence of the plant here with these conditions may help to explain its sporadic appearance on the Cotswolds, near Birdlip, where it was discovered by Miss Butler, who kindly brought me a specimen in 1917, and in a gravel pit at Wanford in Suffolk, by Mr. A. R. Horwood, in the same year. In 1918 Mr. Attenborough discovered three specimens on sand-dunes in Jersey, where I saw them this year. Previously a specimen had been found near Goodwood, West Sussex, in 1916, where, thanks to the Duke of Richmond, I saw it growing this summer. A solitary specimen was found by school-children near Guildford, on the chalk, in 1916, and other solitary specimens have been found near Newhaven and in Wiltshire. It would be interesting to learn in what gardens in the vicinity of these places the Lizard Orchid has been cultivated. In Jersey the seeds may have come from the mainland of France, as it is unlikely it would have escaped the notice of Mr. Piquet and the other Jersey botanists in the place where it grows.

Orchis hircina, moreover, is not the only Orchid to be found sporadically. On the same dunes of Alderney and Jersey from time to time solitary specimens appear, the sand containing enough comminuted shell fragments to afford the requisite calcareous element. France is probably the source whence the seeds come. Another case of the sporadic occurrence of the same species is reported by Sir Herbert Maxwell, from Wigtonshire, who gathered a solitary specimen on sea-sand in that county. Here the source was probably Ireland, whence it had been conveyed by westerly winds.

Another instance is that of the Spider Orchid, which also occurs sporadically on the Jersey dunes, and is doubtless of Gallic origin. An example may be given relating to the Bee Orchid. It is a somewhat rare plant in Northamptonshire. The reservoir for the water supply of the county town was ordered to be covered over. It is of considerable size. Some years after it had been roofed over I examined the top of the reservoir, and found multitudes of the Bee Orchid growing there. It may have been that a few tubers were brought in the clay-covering, or equally likely the seeds may have blown to the clayey surface, germinated, and finding little competition increased in this wonderful manner.

This year has afforded me a striking extension in the geographical range of two species, but here neither wind, insect, nor bird can be contributory agents. *Tolypella midifolia* was only known from the British Isles on the evidence of a plant much encrusted and too old to be a good specimen, but which Mr. Groves referred to this species. It was found in 1896, in Wexford Lagoon, by the Rev. E. S. Marshall, and the species has not been found since. This year, while dredging the Loch of Stenness, in the Orkneys, in company with Prebendary Bur-

den and Colonel H. Halero Johnstone, we came upon this curious species in fair quantity. It was associated with *Chara canescens*, which hitherto has been restricted to Wexford and the south of England—a notable extension of their range. The Charophytes are notoriously sporadic and ephemeral; they may be conveyed from one piece of inland water to another by means of water-fowl. In 1918 I found in a small pond at Twinstead, Essex, a quantity of *Tolypella intricata*. I had never before seen it there, and it had quite disappeared the next year, nor has it occurred there since. The same is true of its appearance at Brickill, in Buckinghamshire, where it occurred for a year, and is now no more.

More remarkable is the case of *Nitella mucronata* at Godstow, near Oxford. It was first discovered at Isleworth, Middlesex, by Dillenius about 1720. Then it was observed in 1810, by Borrer, near West Grinstead, Sussex, by Lord de Tabley, at Fleet Pond, Hampshire, in 1873, and in 1882 by Mr. J. Saunders in the Ouse, near Bedford.

TREES AND SHRUBS.

LATE FLOWERING CLIMBERS.

Exogonium purga (Jalap plant) is, without doubt, one of the most beautiful climbers in cultivation in the British Isles, and as it flowers in September and continues until cut down by frost, it is especially valuable for brightening the walls of a house. Flowers do not appear on the lower part of the plant, but the upper part becomes a mass of beautiful blossoms. It is a rapid growing species, reaching 20 ft. to 30 ft. in one season and is quite hardy.

There is no need to praise the beauty of the white flowered *Solanum jasminoides* (see Fig. 109), as the plant is sufficiently well known, but I cannot help expressing surprise that it is not more generally planted in the southern counties. The specimens here were cut to the ground by the frost of the 1916-17 winter, but quickly pushed up new, vigorous growths from the base which have again covered their allotted space.

Billardiera longiflora, a slender evergreen

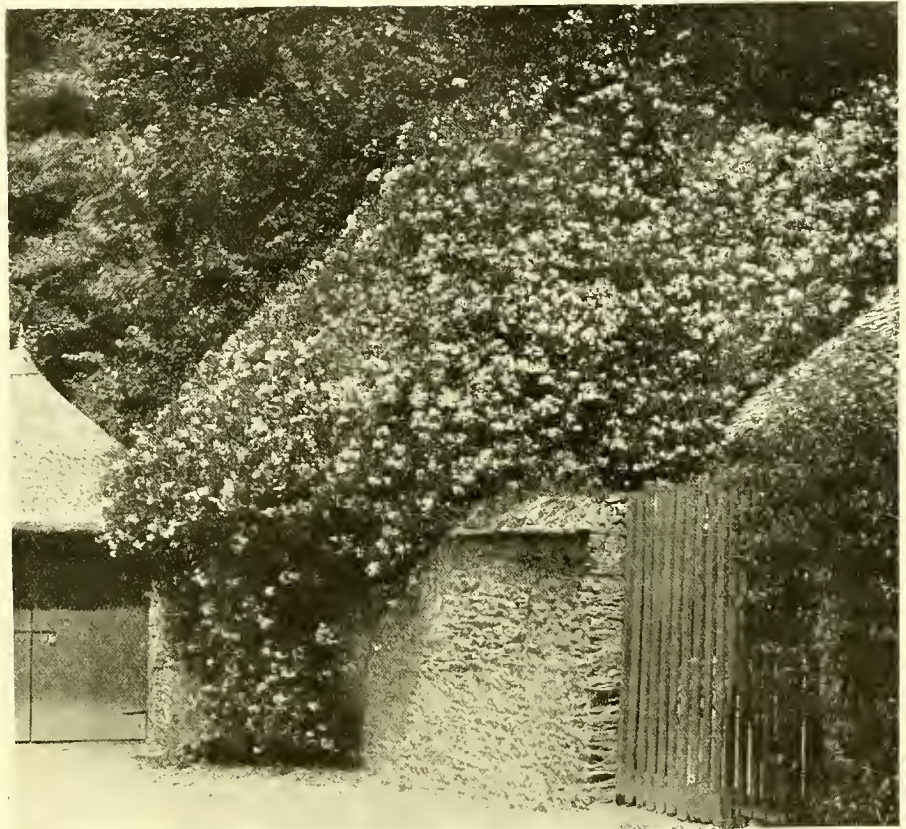


FIG. 109.—*SOLANUM JASMINOIDES* FLOWERING IN THE OPEN IN DEVONSHIRE.

Ten years afterwards, in 1892, I found it at Godstow, and a cart could almost have been filled with it. By the succeeding March it had entirely disappeared, although I saw it under the ice during the winter. It has never reappeared, although a yearly visit has been made to that locality.

One final reference may be made to the occurrence of the sea-dune grass, *Elymus arenarius*, of which the seed has been blown to an isolated rock of some height in Burracuth, Unst, and there has grown plentifully. On the opposite side of Burracuth, underneath Hermaness, about the lighthouse, the ubiquitous colonist from America, *Matricaria suaveolens*, is established in nearly the most northern site in these islands. Inappreciable, yet surely, changes in our flora go on; but it is well to keep in touch with these sporadic occurrences, as who can say which of them may become permanently established here? *G. Claridge Druce, Oxford.*

climber from Tasmania, blooms about July and bears greenish-yellow flowers in the leaf axils. The flowers are of no great value, and the real beauty of the plant is seen only during October, when the seed pods, of a lovely deep blue colour, are freely produced.

Berberidopsis corallina, although the plant is not at its best in autumn, is a charming subject, and has been in flower for fully two months. The long racemes of bright red pendent flowers, with their setting of deep green foliage, are strikingly beautiful.

Lardizabala bitemata flowers in November, and is a most desirable climber. Its foliage is a deep glossy green, and the flowers are produced in long racemes on axillary peduncles; they are purple, of a shade somewhat difficult to describe. This species is not quite hardy, although in company with the above-named subjects (excepting *Solanum jasminoides*) it has withstood the frosts of the past fifteen years, with no protection. *D. Wilmshurst, Hillbrook Place Gardens, Iwer Heath.*

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Lilium.—Lilies that have been grown and flowered in pots during the past season should, where the bulbs are worth it, be turned out and repotted; this applies especially to plants that have been in pots for two years. Bulbs that were received last season and grown on in fairly small pots should, if in good health, have well filled their pots with roots. Such plants should be shifted into larger-sized pots, without any disturbance of their roots. Such popular and useful Lilies as *L. Henryi*, *L. auratum*, and *L. speciosum* in their many fine varieties should be treated in this manner. The newer *L. regale* should not be overlooked, as it is fine for pot cultivation, as well as for growing out of doors. Considering that this Lily may be raised from seed and flowered in three years, it is surprising that it is not more generally grown. All the above are stem-rooting Lilies, thus, when potting, room should be left for applying top-dressings. When potted, the plants are best stood out-doors at the base of a sheltered wall, covering them with some protective material, such as ashes or well-decayed leaf-mould. When they start into growth, they should be removed from the protecting material before they have made too much growth, and should then be placed in cold frames. Newly imported Lily bulbs should be potted as soon as they are received, for they quickly deteriorate if left exposed to the air for any length of time. *L. sulphureum* and *L. nepalense* are two fine greenhouse Lilies, the former seen, at its best perhaps, when planted out in a bed or border in a cool greenhouse. In such a position several groups have been growing in the conservatory at Kew for at least nine years, and this past season the flowering stems attained a height of 9 feet; in some seasons they have been 10 or 11 feet in height. This beautiful Lily is easily increased from the bulbils which develop in the axils of the upper leaves.

Fog.—In the neighbourhood of London, fogs at this season do great damage to many indoor plants. There is no remedy against this evil, and the only thing that seems to lessen its effect is to keep the atmosphere in plant houses as dry and buoyant as possible, and use water sparingly.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Hardy Border Perennials.—The work of dividing and replanting hardy perennials should be completed at an early date. If planting is not contemplated, suitably manure the ground and dig this material into the soil between and around the plants. A dressing of basic slag at the rate of 4 oz. per square yard should be given in alternate years, followed in spring by an application of superphosphate. Some hardy plants, such as Paeonies, resent frequent disturbance of the roots, and many of these will be greatly benefited by a careful top-dressing; remove a little of the surface soil, lightly mulch the roots with well rotted manure and finally cover the manure with fresh loam. On soils of heavy and close texture it is wise to defer top-dressing with stable dung or farmyard manure until early spring. Herbaceous Phloxes are gross feeders and will repay attention in manuring. Aster, Helenium, Hemerocallis and Veronica are amongst species which may still be planted, and each needs a rich soil; whilst a free-root run is beneficial to Henchera and Gypsophila. An isolated group of *Echinops ruthenicus* is equally as pleasing as when grown in association with border plants; the same is

true of several varieties of *Eryngium*. The removal of dead flower stems is generally practised; those of some species and varieties will provide a certain amount of colour for some few weeks to come, and in some positions may be allowed to remain for this purpose.

Bulbs.—The planting of various bulbs should be continued. Grassy sides of avenues, woodland walks and natural dells afford suitable sites for planting varieties of *Narcissus*. Dwarf Scillas are effective on sloping banks. *Ranunculus* and *St. Brigid Anemones* should be planted in deeply worked and well-enriched soil. Lime in some form is beneficial to *St. Brigid Anemones*. Firm planting and a consistently moist soil are essentials to the successful cultivation of the many forms of *Ranunculus asiaticus*.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Mushrooms.—Beds in bearing require careful attention in watering. Aim at keeping the material uniformly moist throughout, for to allow the beds to become either unduly dry or wet would result in failure. Apply water warmed to the same temperature as the bed and maintain a moist atmosphere by syringing the floor and walls once or twice daily, maintaining the temperature of the house between 55° and 60°.



FIG. 110.—CYPRIPEDIUM MAUDIAE MAGNIFICUM AT WISETON HALL (see p. 239).

Gather the Mushrooms by slightly twisting them, so that the stalk leaves the bed cleanly; cutting through or breaking the stems and leaving the base behind, acts detrimentally by reducing production. Continue to make new beds, as material becomes available.

Parsnips.—This vegetable improves in quality if allowed to remain in the bed exposed to hard weather. The decaying foliage and weeds should be cleared away. Later, in the event of severe frost, short litter should be spread over a portion of the crop, that lifting may be done at any time. To prevent treading on heavy ground whilst it is in a wet state, lift sufficient roots for requirements over a week or so, and store them in ashes at the foot of a north wall.

Onions.—Onions in store should now be thoroughly ripe, and the bulbs may be cleared of loose skins. Tying them in ropes will economise space, and provide work for a wet day. Large Onions should be stored in a very dry place, otherwise they will start to rot. To keep Onions well, they should be stored in a cool, airy place; frost must be prevented from reaching them by placing a temporary covering over them during very severe weather.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Vines.—Young vines which were planted during the past season may require a little fire-heat to favour the ripening of the canes, therefore continue to use a little artificial warmth, with ventilation, until the foliage falls naturally. The vines may then be cut back to the first wire, and the house thrown wide open, except during sharp frosts.

The Orchard House.—If very early forcing is contemplated, the compartment usually devoted to this work should now be cleansed, as the time is at hand when the trees should be placed in position. In selecting Peaches and Nectarines for early forcing, choose trees of early varieties that are well set with buds, and the wood thoroughly ripe. Specimens in comparatively small pots that are well filled with healthy roots will give the best results. Of Nectarines choose Cardinal and Early Rivers, and Duke of York and Duchess of Cornwall Peaches. Those who have not tried the new Peach, James Walker, should certainly do so. It is excellent for forcing, sets its fruits freely, and the latter are of large size, good colour and fine flavour. This variety also grows and sets fruits freely out of doors; grown by the side of Duke of York, the fruits were much larger than those of that variety. Such sorts as Crimson

Galande and Peregrine may follow the above varieties, while Lord Napier and Stanwick Elruge Nectarines are suitable for a succession. When each tree has been carefully washed, the requisite number may be taken indoors and placed in position ready for starting. Keep the heads of the trees well up to the light, with plenty of room for the full development of growth, and use a mild bottom heat. Stand the trees on inverted pots, thus regulating the height of the heads. This will permit of placing fermenting leaves amongst the pedestals.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to O. A. CAIRN, Esq., J.P., The Nod, Codicote, Welwyn, Hertfordshire.

Renovation of Wall Trees.—The autumn is the best season for replanting, renovating or root-pruning fruit trees. In the case of trees that have made weak growth, remove a goodly portion of the old top soil, and substitute rich compost to encourage more vigorous growth. Where it is necessary to replace old specimens with young, healthy trees, some of the old soil should also be removed, and the roots planted in fresh, sweet loam mixed with lime rubble, bone meal, and burnt garden re-

fuse. Trees that are making gross growth should be partially lifted and all coarse roots shortened and brought nearer the surface, covering them afterwards with prepared soil.

The Blackberry.—In recent years the Blackberry has been largely cultivated for its fruits, and it is an ideal subject for covering rough fences and trellises or training up poles arranged as a tripod and brought together at the top to a height of eight to ten feet. With careful pruning and training of the plants, Blackberries grown in this way are very effective in the fruit garden. Where insufficient space does not allow of planting these berries in the fruit garden, they may be grown in the wild garden. The pruning chiefly consists in cutting out the old fruiting shoots annually to make room for the young growth that will fruit next season; it is not, however, desirable to train in all the young growths if this would cause crowding.

The Loganberry.—Like the Blackberry, the Loganberry may be planted in waste places, or used as an ornamental climber, to which purpose it lends itself admirably. The young growths often attain a height of 12 feet to 14 feet, and may be trained to wires or posts as advised in the case of the Blackberry. When grown in rows, the plants should be spaced 8 to 10 feet apart. In pruning, cut away all the wood that has fruited, together with the surplus young growths. The canes should then be secured to the wires or posts. I have found it advisable to mulch the roots in summer with well-decayed manure. The Newberry requires similar treatment.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Cheshire.

Maxillaria.—These Orchids are still appreciated by certain growers, especially such species as *M. Sanderiana* and *M. grandiflora*. The former should be grown in Teak-wood baskets, similar to Stanhopeas, for the flower scapes grow decumbent or semi-erect and show to greater advantage when the receptacle is either suspended from the roof-rafters or stood on a bracket. A few species, including *M. sanguinea*, *M. Melegris* and *M. tenuifolia*, have scandent or ascending rhizomes on which the pseudo-bulbs are borne at short intervals, and for this reason ordinary pots or pans are not suitable. A piece of Tree Fern or charred block of wood should be placed in the centre of a pot or pan and made firm at the base. A small quantity of peat and Sphagnum-moss should be placed around the Tree Fern and made secure with wire; if the rhizomes are pegged to the Fern the roots will quickly take possession of the soil provided it is kept fairly moist. Such species as *M. venusta*, *M. picta*, *M. rufescens*, *M. striata* and others of similar habit may be grown in pans filled one-third of their depth with drainage material. The rooting-medium should consist of Osmunda fibre, Sphagnum-moss and peat in equal parts, with a moderate sprinkling of crushed crocks. If the plants are in poor health, a few broken Oak or Beech leaves may be added to the mixture. In repotting make the soil moderately firm. With such a varied group no definite time can be stated in regard to repotting; each plant must be treated individually, and fresh soil given when the roots become active again. Frequent disturbance at the roots is not desirable and, where the soil is not over watered, it will remain in a sweet condition for several seasons. When a plant is repotted a number of the useless back pseudo-bulbs should be removed, reducing the number to three behind each lead or growing point. In the case of *M. sanguinea* the rhizome may be severed when sufficient growth has been made, without any disturbance of the plant; by this treatment new shoots often develop on the lower portion of the rhizome. During the hottest months of the year Maxillarias need protection from the sun's rays, and liberal quantities of water when growing freely until the pseudo-bulbs are matured. When this stage is reached a moderate supply of moisture will keep the plants healthy.

ORCHID NOTES AND GLEANINGS.

CATTLEYAS FROM WESTONBIRT.

FROM the gardens of Lt.-Col. Sir George L. Holford, Westonbirt, Tetbury, Mr. H. G. Alexander writes: "Our Cattleya hybrids of the labiata section have been blooming exceptionally well this season, six flowers on a spike being often produced, but rarely seven, such as you will see on the two spikes sent. The *C. Fabia* is from a plant raised here in 1902, and the *C. Peetersii alba* from a plant raised here in 1907."

Cattleya Peetersii alba (*Hardyana* × *labiata*) is represented by a noble inflorescence of seven large flowers with pure white sepals and petals and well displayed lip over three inches in width, violet purple in front, the disc being yellow with darker yellow lines on a purple ground from the base. *Cattleya Fabia* (*Dowiana* × *labiata*) is equally fine, the seven blooms on the spike being deep mauve colour, and the large lip ruby crimson with many gold lines from the base. The flowers arrange themselves bouquet-like on each inflorescence and set up separately form superb objects for decorative purposes. It is not possible to conceive finer examples even in the famous Westonbirt collection.

large and bold form of the popular *C. insignis*, and *C. i. Banderæ*, one of the most beautiful albinos of that species. *C. Maudiae magnificum* is a fine form of the beautiful hybrid originally obtained by crossing the two albinos—*C. Lawrenceanum* Hyeum and *C. callosum* Sanderæ. *P. W. M.*

BRASSO-LAELIO-CATTLEYA WINSTON.

MR. J. T. BARKER sends from Blenheim Gardens, Woodstock, a flower taken from a spike of four, of this new cross between *L.-C. Canhamiana* (*L. purpurata* × *C. Mossiae*) and *Brasso-Laelia Digbyano-purpurata*. It is a showy flower with white sepals and petals and violet lip with yellow disc. It is a distinct advance on *B.-L. Digbyano-purpurata*, to which it approaches nearest. With *Laelia purpurata* twice in its composition its one defect is the folding back of the sepals, a feature common in some hybrids of that species.

VANDA COERULEA AT LOWTHER GARDENS.

MR. J. JEFFREY, gardener to the Earl of Lonsdale, Lowther, Penrith, sends two fine spikes of *Vanda coerulea*. The larger flowered and better coloured inflorescence had twenty blossoms. Mr. Jeffrey informs us that they



FIG. 111.—CYRIPEDIUM INSIGNE SANDERÆ AT WISETON HALL.

CYRIPEDIUMS AT WISETON HALL.

FROM time to time reference has been made at this season of the year to the large batch of *Cyripedium insignis Sanderæ* at Wiseton Hall, Brig.-Gen. Sir Joseph Laycock's Nottinghamshire residence, and herewith I send two photographs of the brilliant display of *Cyripediums* which Mr. G. W. Musk, the gardener, has this year. Mr. Musk has worked up a batch of *C. Maudiae magnificum* from one plant bought some ten years ago, and has now some two hundred plants, which are displaying about 400 flowers (see Fig. 110). In the centre stage, in the same house, he has 665 flowers of *C. insignis Sanderæ* (see Fig. 111). The beautiful colour of this latter variety attracts attention at once, and those who are familiar with *C. insignis Sanderæ* will appreciate the writer's admiration and delight on beholding such a wonderful display. Of the many forms of *C. insignis*, *C. i. Sanderæ* seems to be the one that amply justifies cultivation in quantity, and whilst *C. Maudiae magnificum* is undoubtedly the more classical flower, with its elegant grace and large, white, beautifully veined dorsal sepal, its colour has not the arresting effect of *C. insignis Sanderæ* when seen in hundreds. *C. insignis Harefield Hall* is another variety Mr. Musk hopes to develop on the same lines, and he has twenty or so plants of this beautiful Orchid flowering freely. The latter is a particularly

were cut from plants purchased in 1916, when they had only four pairs of leaves each, and were growing in four-inch pots. Now they are established in baskets thirty inches square, have thirty pairs of leaves and are in very robust health. He also writes, "the plants number eighteen, and the flowers of no two agree exactly in colour or form. They are grown suspended in an ordinary stove. Sometimes as many as six spikes develop, but the number is reduced to two on each specimen." Mr. Jeffrey's skill as a cultivator of this beautiful blue Orchid is exemplified in the two fine spikes he sends, and we could wish that others who send us specimens by post had equal knowledge of how to pack such choice flowers.

CATTLEYA MEROPE, THE DELL VARIETY.

THE large pure white *Cattleya* with Tyrian purple front to the lip, resulting from a cross between *Fabia* and *Trianae*, for which Baron Schröder received an Award of Merit, as *Cattleya Martella*, at the meeting of the R.H.S. on November 2, and included in the list of awards on p. 232, was incorrectly named. The hybrid was included in the list of hybrid Orchids published in *Gard. Chron.*, March 22, 1919, as *C. Mérope* (*Fabia* × *Trianae*), for W. H. St. Quintin, Esq., therefore, the change in name indicated above is necessitated for the Dell variety, and the name under which it was shown will be dropped.

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THE PASS OF THE WINDS AND WATERS.—I

WHERE the compact parallel ranges of the North-East Frontier south of latitude 26 deg., are splayed out descending gradually to the lower levels of the Shan plateau—the high peaks dropping from over 12,000 to under 10,000 feet altitude—is found a flora remarkable for the number of its endemic species. This region is much dissected by streams, mountain ridges, and spurs running in every direction; it enjoys a wet climate, with rain at all seasons of the year, and is consequently covered with high forest, or, in the upper valleys where the ground is marshy, with Bamboo brake and alpine meadows. The boundaries of this country can be defined with some accuracy by reason of its peculiar flora, whose limits seem to be sharply marked.

This flora is especially characterised by the Rhododendrons, by the Candelabra Primulas, by many endemic species of Gesneraceae, Acanthaceae, and Zingiberaceae, confined to this one little corner. Apart from endemic species, the relationships of the flora are partly with the Yunnan plateau flora to the east, partly with the Indo-Malayan flora to the west; there is also a trace of the Sino-Himalayan flora from the north, though, generally speaking, the two stand in contrast to one another. East of the Mekong (long. 99 deg. 30 min.) the flora is Chinese, or, to use the more comprehensive term, eastern Asiatic; west of the Irrawaddy (long. 97 deg. 30 min.) it is Indo-Malayan. We have, therefore, a block of hill country (essentially the basins of the Taping and Shweli rivers), stretching southward from the 26th parallel lying between long. 97 deg. 30 min. and 99 deg. 30 min., where the flora is highly endemic, marking the transition from the Sino-Himalayan flora of the North-East Frontier ranges, to the Indo-Malayan flora covering the peninsula of south-east Asia. This flora is no more Yunnanese, or Chinese, than it is Burmese, and vice versa, the type of country where it flourishes being common to both sides of the frontier. Thus it may be distinguished as the Burma-Yunnan area.

In the Hlawgaw Hills, southwards of the Hpimaw Pass, is a low pass known as the Feng-shui-ling, a Chinese name which may be rendered "the pass of the winds and waters." It crosses a ridge, which defines the watershed between the head waters of the Shweli in Yunnan and the Ngawchang hka in far Upper Burma. It was the first week of June when I set out for the Feng-shui-ling—early summer down below, but still spring in the high valleys. From the foot of Hpimaw Hill, a good track follows up the valley towards the pass, for it is by this route that the coffin planks, cut from a magnificent Juniper, are carried to China. So we took mules.

The stream was lined with bushes. Many species of Rubus grew here, with *Desmodium* sp. and a Rose. There were also twining plants, *Clematis* sp. and *Trypterigium Forrestii*, which, in fruit, is a glorious sight. In open places were patches of yellow *Mimulus nepalensis*, hardly in flower as yet, tall glassy-stemmed *Impatiens*, and spotted *Bagle*. We came upon fresh hill cultivation, the charred tree trunks

of the burnt forest lying about in all directions, so that progress was difficult; then, crossing a low col, descended to a meadow overgrown with ordinary Bracken and with white Trumpet Lilies (*L. Wallichianum*). At higher elevations a dull yellow Lily—*L. nepalense*—is found. Here we pitched our first camp, and a bad place it was, for blood-blister flies by day and sand flies by night gave us no peace. Close by was a Chinese village.

Other plants on the Bracken-clad slopes were the little capitate purple-flowered *Primula limnolia*, a small Sundew (*Drosera peltata*), the Royal Fern (*Osmunda regalis*), a *Botrychium*, species of *Epilobium*, *Gentiana*, *Swertia*, *Hedychium*, and others; but *Primula limnolia* was already seeding, while most of the others were not yet in flower.

We started early on the following morning, intending to camp at midday and spend a peaceful afternoon. At once we plunged into the temperate rain forest, following a brawling torrent which rushed down the narrow valley. Here we saw many big trees, but there were also numerous Rhododendrons in bloom, besides other shrubs. In the undergrowth, too, there were flowers amongst the Bamboos, the most striking being a pale green and ivory-white Orchid (*Calanthe* sp.) and another with chocolate flowers; and the remarkable *Arisaema Wallichianum*, with big three-lobed leaves and the silver-striped, chocolate-coloured spathe drawn out at the tip into a flagellum which sometimes reached a length of six feet! This lash trails over the ground, and the more rainy the climate, the darker and wetter the forest where these Cuckoo-pints grow, the longer and slenderer is this thread. There are many species of *Arisaema* on the North-East Frontier, but those found in the open meadows have not the long, trailing lash. In the dry river gorges of north-west Yunnan other species again are found, but in these the tip of the spathe is scarcely drawn out at all, ending merely in an erect point. Nor in these is the lid of the spathe so well developed.

Of what use is this strange appendage? The above facts should give us a clue. Is it, perhaps, a fishing line hung over the edge of the cup into the wilderness below to catch—what? Is it a guide rope, to make it easier for guests bidden to the cup that they may pollinate the flowers, to find their way? Hardly can it be just a relic, of no use now, or one of Nature's failures; for why in that case should it be found in all stages of development, from the mere acuminate apex in the arid valley forms to the six-foot whip-lash of *Arisaema Wallichianum*? At any rate, it is a most curious thing.

In the herbaceous undergrowth were also many *Urticaceae* growing socially; scattered *Liliaceae*; and an Iris with pale-blue, floppy flowers, and lemon-yellow crests on the falls—a washy-looking plant of no garden merit.

Luckily the Bamboo brake was not dense, and many beautiful shrubs were in flower, amongst them *Deutzia discolor* and the charming *Luculia gratissima*, with shell-pink blooms, sweetly fragrant. Another interesting shrub, growing in open places, was a species of *Hedwingia*. But it was to the Rhododendrons I chiefly paid heed, almost every one met with turning out to be new. The first one encountered was *R. megacalyx*, Balf. f., a close ally of the better-known *R. crassum*, from which it differs in minor points. It is a bushy tree up to 25 feet high, growing in the rain forest, and its small trusses of white trumpet flowers, smelling strongly of Nutmeg, are very

conspicuous. As the "Nutmeg Rhodo," it was known to me in those days. Then came *R. scaphilium*, Balf. f., another new species. This was a dwarf shrub, rising only about two feet from the ground, though it was more generally seen growing on fallen tree trunks; the white flowers nestle in pink calyces. The species is allied to *R. bullatum* and *R. Edgworthii*—plants familiar to lovers of the genus, which will serve to fix it—but, unlike them, it is not fragrant.

Yet a third Rhododendron was the epiphytic *R. dendricola*, Hutchinson, nearly always seen growing at the tops of tall trees. In places the fallen corollas dappled the ground and filled the air with sweetest perfume. This, also, is a near ally of *R. crassum* and of *R. Dalhousiae*—they all belong to what Mr. Hutchinson has called the Maddeni series. It may be remarked here that *R. crassum* itself, which I found on the N.E. Frontier (though not in this particular valley) is the only one of the three collected by me which ranges eastwards into Yunnan. Typical *R. crassum*, in fact, is a Yunnan plant, and Mr. Hutchinson expresses some doubt as to whether my *crassum* is *crassum* or something else. He says that my plant is more robust than the Yunnan type, with larger leaves, but that is the only distinction he can discover. As yet the material of the Burma plant is inadequate.

This valley also yielded the beautiful crimson-flowered *R. facetum*, Balf. f., another rain-forest species blooming in June. Wherever a ray of light beat through, *Clematis Spooneri* trailed over the bushes. Climbing gradually up, we presently left the stream to cross a spur. The soil was all clay, very sticky and slippery, and here we found a bank covered with *Primula sonchifolia*, no longer in flower. Here, too, in deep shade and a perspiring atmosphere, flourished a new genus of *Ranunculaceae*—*Beesia cordata*. It has reniform or broadly heart-shaped leaves, deeply cordate at the base, with acute apex. The flowers are white, somewhat resembling those of the Meadow Rue, borne singly in the axils of bracts all the way up the stem.

Early in the afternoon we camped in the forest by a small stream. There were large numbers of Ferns in the undergrowth here, and white-flowered Begonias on the rocks. The trees, mostly Oaks, were covered with moss and a small, erect *Selaginella*. Amongst the shrubs and smaller trees were a Holly and a *Berberis* with large pinnate leaves. In patches of open meadow which here and there prevailed over the forest were tall plants of *Lilium giganteum*—which delights to exist in a rain bath and as much shade as it can get; *Caltha palustris*, as happy here as in an East Anglian marsh; and a yellow-flowered *Codonopsis*, sprawling all over the bushes and stinking as ever. What a pity these charming plants have such a vile odour—though it must be admitted they do not obtrude it. The pale sea-green foliage and slender, threadlike stems of some of these rampant climbers are delightful, all hung with mute bell-flowers.

Next morning we broke camp and soon emerged into open meadow and Bamboo brake, occupying the head of the valley. In the forest here grew *Primula sechua*, one of the Candelabras. From a crowd of large, dark-green leaves it sends up scapes a foot or 18 inches high, bearing whorls of dusky crimson flowers, slightly zygomorphic; the centre of the corolla is darker than the rim. It is a big, coarse, brightly-coloured species. *F. Kingdon Ward*.

THE BULB GARDEN.

AMARYLLIS BELLADONNA.

Of all the autumn-flowering bulbs, *Amaryllis Belladonna* is the most magnificent, and one which should be more often grown in gardens. Bulbs may now be planted at the depth of 3 inches below the surface, in light, well-drained soil, the best position for them being at the foot of a south wall on a terrace, where they increase rapidly after the first year or two and produce a fine display of delicate pink-coloured flowers from August to November, the date of their opening depending on the amount of summer sunshine they obtain. Until they are thoroughly established after planting it is desirable to place a pane of glass over the bulbs, to throw off the too abundant rain which might rot them, and this precaution may well be continued each winter, in cold localities, from November till March, although it is not necessary in the South of England. The foliage appears in March, after which no covering is needed, and it dies away in July, before the great, stout-stemmed umbels of bloom appear. The variety *A. B. blanda* flowers a little later than the type, and is paler pink. It may be grown in pots, like *Nerines*, keeping the bulbs close to the glass roof, without water, after the leaves fade in Spring, but supplying an abundance of water when the flowers-stems appear. A yearly top dressing of good loam and burnt garden refuse is desirable in March, in the case of bulbs in borders, but no fresh manure should be used for them. *J. L. Richmond.*

CROCUS HADRIATICUS.

Mr. BARTHOLOMEW (p. 205) asks whether any reader will confirm his statement that this *Crocus* is very sweetly scented. Only a week or so ago I was separating lilac-flowered from white-flowered seedlings of this species. The sun was shining brightly, the flowers were fully open and, as I dug up the bulbs, I was delighted with the sweet honey-scent given off by the flowers. My impression is that the spring-flowering species are more generally scented than those that flower in the autumn, and I seem to remember noticing that the various forms of *C. chrysanthus*, at any rate, are strongly scented.

It is always a matter of astonishment to me that the *Crocus* species are not more generally cultivated than is the case. Perhaps it is a matter of soil. Hitherto, I have gardened in warm, light sand, where *C. zonatus*, *speciosus*, *ochroleucus* and others became veritable weeds. This autumn I have replanted my *Crocuses* in much heavier soil, and have yet to see whether they will flourish in it. They are certainly flowering well and I should be very sorry to be without the fine large flowers of *C. speciosus*, the lilac, tassel-like style of *C. iridiflorus*, or the solid ivory white of *C. marathonsius*. This last is at its best now, and is very fine indeed. The flowers are bold and of great substance, and the scarlet style provides a striking colour contrast to the white of the petals. *C. marathonsius* is perhaps the most striking of the white, autumn-flowering species, but the white form of *C. speciosus*, with pointed petals and orange style, is a worthy predecessor in late September. At the same time, I had also in flower this year the pure white form of *C. iridiflorus*. In this the tassel-like style is also pure white, and the flower has the short inner and long outer segments that make this species so distinct from all other *Crocuses*. *S. Arnott.*

TULIPA SPRENGERI.

Of the *Tulip* species *Tulipa Sprengeri* is probably the latest to bloom, and this is an advantage to many lovers of the "fop of the parterre," as the poet called it. The flower of *T. Sprengeri* is of uniform scarlet throughout, and, though effective, is not flamboyant in its colouring; it is of moderate size and of good form. The plant is a pretty subject for the rock garden, and should be acceptable as a clump in the border. Unfortunately its cost is too high for the liberal planting which would

be desirable in a border, and it does not appear to increase rapidly in the garden. I find that it lives for several years if left in the soil, but that it is desirable to lift it every year or two, to give it a rest, and replant it in autumn. It grows about a foot high in Dumfriesshire. *A.*

NARCISSUS PALLIDUS PRAECOX.

This early *Daffodil* was in bloom in my garden last spring in a sheltered spot, on February 6. It is planted under the shelter of *Spiraea canescens*, or *flagelliformis*, whose branches ward off the colder winds without obstructing the light to any great extent. This group is one of the first in my garden to show colour after the turn of the year. One always appreciates the first *Daffodil*, and *N. pallidus praecox* is so soft and beautiful in its colouring that it is always enjoyed. *S. Arnott.*



FIG. 112.—MESEMBRYANTHEMUM CRASSULINUM: FLOWERS WHITE.

THE ALPINE GARDEN.

MESEMBRYANTHEMUM CRASSULINUM.

As attention has been drawn on p. 205 to *Mesembryanthemums* that are suitable for the rock-garden, and as *M. crassulinum* was mentioned, it occurred to me that an illustration (see Fig. 112) of that species would be of interest to readers of the *Gard. Chron.* *Mesembryanthemum crassulinum* is a plant that seems to be very little known, but it is certainly one of the most charming members of the Fig-Marigold family, and one of the most suitable for the rock-garden, being neat and compact in habit, and forming a cushion of succulent leaves, while the pure white flowers, an inch or so in diameter, are borne in great profusion during June and July. This *Mesembryanthemum* is a native of South Africa, and should be grown in a warm spot in a sheltered position, in well-drained soil. Like the majority of the family, it is readily increased from cuttings, so that even in those parts of the country where it cannot survive the winter a few plants may be rooted in a frame, and planted out in the spring, where they will soon grow freely and give a good display of flowers the following summer. *F. G. Preston, Cambridge.*

GERANIUM HYBRIDUM.

So far, this is, I believe, the only name given to a dwarf hardy *Crane's Bill*, which is understood to be a hybrid between *G. sanguineum* and *G. lancastriense*. Inasmuch, however, as the latter is reputed to be only a variety of the former, and is classed as such in the *Kew Hand List*, the name would appear to be unfortunate. For other reasons, too, it would be well that this plant should have another name. It was observed and collected by a small party of enthusiasts in search of *G. lancastriense* on Walney Island, one of whom is a noted botanist. In its habit of growth the plant partakes greatly of the dwarfness of *G. lancastriense*, but the colour of the flowers is almost exactly like the typical *G. sanguineum*. This *Geranium*

promises to be a good companion to *G. lancastriense* in the rock garden, though there are some who will not care for the rather aggressive tone of *G. sanguineum* when repeated in this hybrid or cross. *S. A.*

THE ALPINE MEADOWS OF BURMA-YUNNAN.

I AM greatly interested by Mr. Kingdon Ward's article in *Gard. Chron.*, of March 6 last, about the Alpine meadows of Burma-Yunnan, which (I speak only of the Burmese) we both had the pleasure, almost in concert, of treading in 1920. Mr. Ward, however, says that *Adenophora*, *Salvia*, and *Fritillaria* are "not found on the N.-E. Frontier at all." May I, therefore, record that, even in my own partial experience, two species of *Adenophora*, two of *Salvia*, and one of *Fritillaria* did, as a matter of fact, enrich those Itawgaw Hills, on which "none of these genera even are yet recorded."

The "Crimson Lily" referred to is *L. Thompsonianum*, and both Mr. Ward and myself may have possibly been premature in attributing the two regnant Lilies to *L. Wallichianum* and *L. nepalense*. Nor is that lovely *Nomocharis* to be certainly identified with *N. pardanthina*. *Reginald Farver, Nya-U, N.E. Frontier, Sino-Burmese Alps, June 24, 1920.*

DANGER TO SITKA SPRUCE FROM CHERMES COOLEYI.

DESCRIPTIONS of the attacks of *Chermes Cooleyi* on Oregon Douglas Fir in this country have appeared in the *Gardeners' Chronicle* of June 26 (p. 318) and July 17 (p. 36) of this year. The insect is spreading its range, now being recorded over most of the southern counties of England, and it was detected by the writer in June last in a plantation of Douglas Fir at Dawyck, in Peebleshire, seven trees about 15 feet high being affected. Mr. Speyer states, in the second article alluded to above, that at Bagley Wood, Oxford, the larvae, which appear in thousands on the young, green shoots of the Oregon Douglas Fir early in May, had by the end of that month, for the most part, "developed wings and flown, probably to Sitka Spruce." He did not, however, observe their alighting or occurrence on Sitka Spruce, on which they would probably form galls, as is the case in British Columbia.

It is of the greatest possible interest to be on the watch and see at what place and under what circumstances and conditions galls of this insect are formed in this country on Sitka Spruce, and also to trace the source of the attack to some Douglas Fir plantation in the neighbourhood. Careful observations will render easier the planning of measures to deal with this pest.

Mr. R. N. Chrystal was sent by the Entomological Branch of the Department of Agriculture (Ottawa) to study this pest in Stanley Park, Vancouver, and his published report is of great interest. We learn that he is now in England and trust that he will continue his observations here. In Stanley Park the damage done to Sitka Spruce is very considerable, a large number of trees having been killed, while many others are in a dying condition and beyond recovery. It is very serious indeed for the success of our increasing plantations of Sitka Spruce, to hear the extent of the injury in British Columbia; though we may derive a little consolation from the statement that in Stanley Park the damage done on Douglas Fir is very slight, no deleterious effect on the health of the latter tree having been observed by Mr. Chrystal.

The galls of *Chermes Cooleyi* on Sitka Spruce are described by Mr. Chrystal as varying in length from $\frac{1}{2}$ inch to 3 inches. Either the whole twig may be completely galled, or the twig may be galled upon one side only, causing twisting and bending of the stem. The wholesale destruction of the twig is assured. The number of chambers in each gall varies from 40 to 200, and the number of young in each cell chamber from 1 to 15. The young are covered with a waxy coat which protects them against the superabundance of liquid excretion which they exude. The galls open in the beginning of July in British Columbia.

Small galls have been noticed on the twigs of Sitka Spruce in Britain; but these do not appear to be due to *Chermes Cooleyi* and are harmless. As the spread of the latter insect from Douglas Fir to Sitka Spruce is to be dreaded, specimens of branches suspected to be bearing the remarkable galls described above should be sent to the Pathological Laboratory, Kew, for investigation, full particulars of the attack being supplied at the same time. A. Henry.

HARDY FLOWER GARDEN.

ALSTROEMERIA AURANTIACA.

ALSTROEMERIA AURANTIACA and its variety *auraea* are among the hardiest of the race. The plant flowers freely when established, and its only fault seems to be that it has a tendency to increase too freely, but it is not so aggressive in this respect as its ally, *A. chilensis*. It grows from two to three feet high and gives a number of beautifully formed, deep-yellow

flowers streaked with brown towards the base. The variety *auraea* is lighter in colour.

The plant is very effective in borders, and isolated clumps are also very attractive. The spikes are excellent for use as cut blooms, and they are especially useful for furnishing large vases.

This *Alstroemeria* needs a somewhat light soil and sunny position; it evidently needs lime in the compost, at least I have seen it more flourishing when calcareous matter was present than in a soil free from lime. The roots should be planted about six inches deep, and if this work is done in autumn litter or ashes should be used as a protection over the roots. I prefer spring planting and have found this more profitable. The tuberous roots are very brittle and easily broken. *A. aurantiaca* may be raised from seeds sown in pots or pans under glass in spring.

LUPINS IN LATE OCTOBER.

A FEW spikes on some of my plants of *Lupinus polyphyllus* were still in bloom at the end of October. The plants were cut back directly their first blooms were over, and they threw up secondary spikes in September and have given flowers ever since. They are welcome in the border in late autumn when rains and frost have destroyed the full beauty of most other flowers. With the range of colour now obtainable in the modern Lupins, a considerable variety is available for the decoration of the border in autumn by cutting back the plants when they have finished their first flowering, a method sometimes adopted in the case of *Delphiniums* and *Pyrethrums*. S. Arnott.

VERBENA CHAMAEDRIFOLIA.

This brilliantly coloured species has been the subject of many notes in the *Gardeners' Chronicle*, but it has always been referred to as a subject suitable for planting on rockeries or as a front-row plant for the border. It is of strong growing habit, roots developing from every joint, and the growth is truly prodigious on rich soils.

I have seen it this year covering several square yards without giving anything like a fair return of flowers for the space occupied. Such masses are, however, attractive though sparsely flowered, owing to the brilliancy of the blossoms. Having for years no better place to grow this *Verbena* other than the margin of a bed or herbaceous border, the result was not satisfactory, it being a case of much growth and but few flowers. This year the plants, after being potted into 5-inch pots, were trained to 3-ft. stakes, and planted out in May. The result was a revelation, as the plant, on account of its free and branching habit, forms delightful and shapely pyramids, the growths loosely slung to the stakes producing flowers in great profusion. No more dazzling effect can be imagined than specimens of this *Verbena* planted thinly above a groundwork of white *Violas*, *Alyssum* or the white-leaved *Centaurea candidissima*.

Nor is this an unnatural way to grow the plant, for Mr. B. Wells, son of Mr. W. Wells, hardy plant nurseryman, Merstham, collected this species in its native habitat during 1918, and found it growing up through low shrubs, the *Verbena*, several feet in height and overtopping the shrubs, presenting a brilliant sight.

Neither is there anything new about this method of growing *V. chamaedrifolia*, for I am assured that it was so grown forty years ago in the London parks, and plants five feet in height were used.

V. chamaedrifolia, though still appearing in the nurserymen's lists as a novelty, is a very old plant, for it was introduced about 1833 and flowered about that date in the Glasgow Botanic Garden. The species is figured in *Bot. Mag.*, tab. 3333, but the coloured plate does not portray the intense brightness of the blossoms.

V. chamaedrifolia, where allowed to creep, or grown as a standard, should be planted in full sun. T. Hay, Regent's Park

NOTICES OF BOOKS.

Profitable Fruit Growing.*

The essay with which the late John Wright won the Gold Medal offered by the Fruiterers' Company in 1889 has reached its eleventh edition, which is the best possible proof that it fulfils the purpose for which it was written. As a guide to the elementary practice of hardy fruit culture for cottage gardeners and small holders—in fact, for any beginner—the book is still without a serious rival. The directions for planting, pruning, grafting, etc., are as sound to-day as ever they were, and they could hardly be presented in clearer or simpler language. In other directions the book would have been all the better for more drastic revision. For instance, the examples of success in fruit-growing with which the essay opens are by no means striking in the light of present-day values; nor is the expectation of a return of only twopence a pound for Black Currants and Cox's Orange Pippins. It is no longer possible to recommend Boskoop Giant as the variety of Black Currant least liable to attack by bud mite; and the banding of trees with such mixtures as cart-grease and oil, or soft soap, tar and whale oil, smeared on hay or sacking, is out of date. M. G.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(Concluded from page 230.)

CARNARVONSHIRE.—The fruit crops were the very worst I ever knew. We had only a few Apples. Cherries, Pears and Plums were total failures, notwithstanding the trees were a mass of blossom. Half the Strawberry crop rotted owing to wet weather. J. S. Higgins, Glynllifon Gardens, Llanwnda, Carnarvonshire.

DENBIGHSHIRE.—There was a fair show of blossoms, but wet, sunless weather prevailed during the whole of the flowering period, and was very detrimental to pollination, so that the crops were light. Insect pests have not been specially troublesome, but the season has been favourable to fungous diseases. F. C. Puddle, Bodnant Hall Gardens, Tal-y-Cafn.

The fruit crops were very thin, owing chiefly to the wet, sunless weather during the flowering period, which was three weeks earlier than usual. The varieties of Apples which cropped satisfactorily were Prince Albert, Lord Derby, and Warner's King. Small fruits were average crops, but Strawberries were the poorest that I have seen here for many years. J. A. Jones, Chirk Castle, Chirk, N.W.

GLANORGANSHIRE.—We had the worst fruit crops I have known for many years, and what promised to be a record year (judging by the bloom prospects) has proved disappointing. Strawberries were a good crop, but owing to continuous wet weather the greater number of the berries were spoiled. C. T. Warmington, Penllergar Gardens, Swansea.

PEMBROKESHIRE.—We had few Apples, Pears or Plums this year. The trees blossomed well, but cold and wet weather prevailed at the time the fruits were setting, and spoilt the prospects of good crops. The Apple blossom Weevil spoiled what few Apples we had. Gooseberries and Black and Red Currants were good average crops, and Strawberries also did well. T. H. Roberts, Slebech Gardens.

IRELAND.

CO. MEATH.—The fruit crops of 1920 were the very worst in the memory of the oldest growers of this district, which is a noted fruit-growing part of Ireland. Some growers had not £5 worth of fruit on ten acres. The season from the beginning of the year was not for one day favourable to the growth of fruit. Michael McKewen, Julianstown, Drogheda.

* *Profitable Fruit Growing*. By John Wright. 11th. Edition. Illustrated. Published for the Worshipful Company of Fruiterers by W. H. and L. Collingridge, 148-9, Aldersgate Street, E.C.1. Price, 2s. net.

TYRONE.—The fruit crops this season were unsatisfactory. Apples and Pears were thin, although some of the early varieties carried fair crops. Plums were a total failure. Small fruits were more satisfactory, Black Currants especially being good. Strawberries were a moderate crop, but rather late in ripening, and many of the fruit decayed owing to continuous showery weather. Insect pests have not given any serious trouble, for which we have probably to thank the wet season. As regards fungous diseases, the most troublesome is Silver Leaf on Plums. It has been getting gradually worse for some years, until we have not a Victoria Plum free from it, and many are dead. *Fred. W. Walker, Sion House Gardens, Sion Mills.*

CORK.—With very few exceptions, Apples, Pears and Plums were far below the average. Although the majority of trees produced an abundance of bloom, harsh winds and cold nights prevailed during the flowering period, and prevented the setting of the fruit. Gooseberries and Black Currants were satisfactory in sheltered situations, and yielded good crops where the bushes were young and the cultivation good. Strawberries, however, finished a disappointing crop, owing to the cold, wet and sunless weather during the ripening period. So far insect and fungous pests have not been so troublesome as in other seasons. *J. Dearnaby, 17, St. Patrick's Terrace, Magazine Road, Cork.*

KING'S CO.—The best crop of Apples was on trees of Worcester Pearmain, Bramley's Seedling, and Mère de Ménéage. Bush Pear trees gave very little fruit, but trees on walls had an average crop. Strawberries were plentiful, but ripened very quickly owing to dry, hot weather. Other small fruits were good. Plums and Pears in the open were almost failures, and trees on walls and in very sheltered positions gave crops below the average. Damsons were a complete failure. The cause of the failure of the fruit crops was due to late frosts at the end of May and early in June. *E. Clarke, Claremount, Garrycastle, Banagher.*

LIMERICK.—The fruit crops are the worst for the past six years. The trees had a grand show of blossom, but for some reason, presumably cold, sunless days and frosty nights, few fruits set; only odd trees are carrying fair crops. The best cropped Apples were Lord Grosvenor, Worcester Pearmain and Manx Codlin. Plums and Pears were failures. Small fruits were excellent, particularly Gooseberries and Raspberries. The soil is a heavy, rich loam, over limestone. *Horry Nixon, Rockbarton Kill-mallock.*

LONGFORD.—The spring season was very wet and cold, with the result the bloom did not set. The soil is of a peaty nature and the subsoil gravelly. Old-established fruit trees of such varieties of Apples as Bramley's Seedling do fairly well. Greenfly was bad on Gooseberries and Currants. Gooseberries that were badly attacked by American Gooseberry mildew last year showed no sign of the disease this season. The bushes were sprayed with No. IV. fluid in the winter and lime was also dusted over them. *A. J. Campbell, Castle Forbes Gardens, Newtownforbes.*

WATERFORD.—The fruit crops were the poorest for the past twenty years, and especially Apples, Pears, Plums, and Cherries, of which we had practically none. The few fruit of Apples were on such varieties as Lane's Prince Albert, Bramley's Seedling, Loddington, and Baron Wolseley. We had only a few Pears and Plums. Gooseberries, Raspberries and Black Currants, were the best crops for many years past both in quantity and quality. All fruit trees are healthy and pests have not been troublesome, except perhaps caterpillars, which appeared earlier than usual. *D. Crombie, Curraghmore Gardens, Portlaur.*

JERSEY, CHANNEL ISLANDS.—The fruit crops were very poor with the exception of small fruits, which were very good. We had scarcely any Apples, only a few Pears on some sorts, and stone fruits were quite a failure. The constant changes of the weather at different periods during the flowering and setting season of the various kinds of fruits ruined the prospects for a good fruit year. *Thomas Sharman, The Imperial Nursery, St. Heliers.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Experiment with Potatoes.—Mr. C. E. Gregor and I have carried through a little experiment with Potatoes at his farm at Innerwick, a record of which I think is worth permanence in your columns. The variety tested was Kerr's Pink. Twelve normal sets, weighing about 4½ ounces each, were planted—by normal, I mean sets which had not given any second growth. Twelve sets were planted, each about 4½ ounces in weight, each of which had given rise to second growth tubers. The second growth tubers were detached at lifting time, and these were found to weigh about three ounces each. The results were as follows:—Produce of 12 normal sets, 66½ lb.; produce of 12 sets which gave out second growths, 59 lb.; produce of 12 second growth sets, 84½ lb. This seems to prove what most of us believe, that immature or unripe seed gives the best results. It also proves that some power goes out of the primary tuber when it gives rise to second growth. *W. Cuthbertson, Duddingston.*

Holdings for Ex-Service Men.—As there are many complaints about the failure to supply Ex-Service men with a piece of the land they fought for, I beg that you will help to make it known through your columns that the Surrey Garden Village Trust is prepared to accept a limited number of applications for holdings in their proposed garden village, three miles from East Croydon. The market garden holdings range from 3 to 10 acres. Applicants should have a thorough knowledge of intensive food production, possess a working capital of £40 per acre, and be able to pay 25 per cent. towards the cost of the land and buildings. There will be, also, "cottage holdings" with less land, for those who wish to spend only part of their time working their land. Full particulars will be given on inquiry, which should be accompanied by a stamped addressed envelope. *E. L. Hudson, B.A., Hon. Sec., Surrey Garden Village Trust, Ltd., 46, High Street, Croydon.*

Scentless Musk.—I was interested in reading, on p. 199, some observations regarding the loss of fragrance in the Musk. I have noticed that Musk is scentless this year. In the first instance, the foliage was without scent, but I thought the flowers might be fragrant, in which I was disappointed. The following possible explanation occurred to me: It is known that the strongly refractive drops dispersed throughout the cytoplasm are usually globules of some ethereal oil, which give to the plants their perfume. Under certain conditions these oil globules become crystallised. It is perhaps at this point the scent disappears. Certainly, this year, weather conditions have not been normal. When they have been all that could be desired, it has been noticed by others that loss of scent has been in evidence in the Musk. I suggest, in explanation, that the plant may have been disturbed during digging operations. Certainly I have noticed this to be the case after plants have been lifted. This may be considered to be borne out by Mrs. W. H. Cope's experience in purchasing plants from the flower market. In these cases "certain conditions" may have crystallised the ethereal oil globules. A few years ago *Mimulus moschatus Harrisonii* was grown as a pot plant in greenhouses for its perfume. After a period the scent disappeared, and the value of the plant, as a greenhouse subject, was lost. May not this disappearance of scent be due to repotting, entailing the removal of the plant and the alteration of the conditions setting up crystallisation of the globules? It may be asked—Why does not the scent of other plants disappear likewise? Their oil globules may be more ethereal than those of the Musk. When, and if, the Musk recovers its fragrance, this may be due to the crystals becoming more volatile. I should be interested to read of other possible explanations of this loss of fragrance, but I cannot quite see the connection between the change in the

type of insects effecting fertilisation, and their effect on scent-producing cells, as suggested by a member of the Birmingham Field Naturalists' Club. *L. E. M.*

Colour in Apples (see p. 195).—With reference to the recurring query as to colour in Apples, I came to the conclusion several years ago that the conditions favouring high colour are present not long after the fruit is formed. I can always tell when the fruit is the size of a marble whether it will be well coloured or not. In the garden here the fruit does not, in a general way, colour well. The position is too sheltered and not exposed enough. If penetrating winds prevail in March and April, when the fruit is forming, Apples develop high colour; not inevitably, of course. If the wind is wet and warm, I should not expect the colouring to be so pronounced. We arrive at the same result in colouring Grapes, by having a current of air from the bottom to the top ventilators. I have had a very practical illustration here this year in the colouring of Grapes. In a vineyard of Black Hamburgh variety, owing to wasps, I had to bag all the bunches. As the muslin was of a fine weave, not much air circulated about the berries, which were, in consequence, very poorly coloured, although the quality was improved by the skins being very tender. On the contrary, in a cold vineyard, 50 ft. long, in which much more air was admitted both at night and day than usual, in an endeavour to retard the ripening of the berries as late as possible, the skins are much thicker and much blacker than in previous years. *J. D. Colledge, The Gardens, Cobham Hall, Kent.*

Potash for the Brassica Tribe.—A remarkable instance of the value of potash as a stimulant applied to Savoys in the simple form of wood ash and burnt refuse recently came under my notice at Aldenham, combined with inter or intensive cropping. The gardener, Mr. E. Beckett, had a large batch of autumn-sown plants of Cauliflowers which gave extremely fine heads. When these plants had become thoroughly established, rows of several varieties of Savoys were planted between the rows of Cauliflowers as a successional crop. For a time both crops flourished amazingly, when the Savoys suddenly appeared to have suffered a check to growth, becoming quite pale in colour. A thick dressing of wood ash and burnt refuse was applied to the surface soil about the plants and the ground was subsequently hoed. In a short time a change in the colour of the leaves took place; the plants grew vigorously, and as I saw them on the 14th ult. the crop of all the varieties was a magnificent one. *E. M.*

Erigeron mucronatus.—I heartily sympathise with Sir Herbert Maxwell (see p. 207) in his experience of this plant, for in light, sandy soil it is a most pernicious weed. Seedlings have a way of springing up among rock-plants and of growing vigorously late in the summer at a time when rock gardens are apt to be less carefully tended than in the spring. Then, in an incredibly short time, the plants spread into large mats and soon smother the choicer plants over which they sprawl. *W. R. Dykes.*

Hardiness of Eucalyptus Gunnii.—The mention of *Eucalyptus Gunnii* in your issue of October 23 (see p. 203) leads me to write of the remarkable growth of this species at Brightlingsea, in Essex. The trees are chiefly growing near the church, which lies a mile from the town. The nearness of the estuaries of the Colne and Blackwater has, no doubt, had an effect on the growth of the trees. Specimens of 35 feet to 40 feet in height are abundant, whilst the tallest example is probably quite 60 feet in height with a girth of 6 feet 5 inches at about a yard from the ground. The species was introduced to this district by the late Mr. Bateman, and most of the trees are on The Hall property. The trees flower freely and seeds mature in abundance. A good stock of young plants was noted in the kitchen garden. I may add that the severe frost of 1917 had very little effect on the trees. *C. Wakeley, Chelmsford.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

OCTOBER 19.—*Present*: MESSRS. E. A. BOWLES, M.A. (in the chair), A. Worsley, J. Fraser, W. Fawcett, W. Hales, C. C. Hurst, Dr. J. Voelcker, and Mr. F. J. Chittenden (hon. sec.).

Proliferous Onions.—Mr. J. FRASER showed Onions which he had raised from Onion bulbs produced in 1919 at the apex of a flowering shoot of Onion. These had flowered and had themselves produced a number of small bulbs among the flowers.

Tricotyledonary Apple Seedling.—He also showed a seedling Apple which had produced three cotyledons, but in which the leaves occupied normal positions.

Vegetation of Kew Green.—Mr. FRASER also produced lists of plants which he had found on Kew Green, including 46 which he considered native there, 23 woody plants which had been introduced by various agencies (including Dates, Oranges, Locust and Plane), and 88 herbaceous plants which he did not regard as native.

Proliferous Scabiosa.—Dr. VOELCKER showed flower-heads of *Scabiosa atropurpurea* which had produced leafy shoots from the centre of the capitulum.

Fasciated Chrysanthemum.—Mr. BOWLES showed from Mr. Dunton, Penn, Wolverhampton, a curious flattened fasciated growth of *Chrysanthemum Sunshine* (see Fig. 113), spreading from a round basal part into a fan-like structure about 5 inches across and 9 inches long.

Certificates of Appreciation.—A Certificate of Appreciation was recommended to Miss BREEZE, of the Agricultural School, Cambridge, for work done in investigating the heredity of blight and wert resistance in Potatoes. A Certificate of Appreciation was also recommended to PANTIA RALLI, Esq., for work in raising *Brasso-Laelio-Cattleya citrina*, the result of a cross of a *Brasso-Laelia* with *Cattleya citrina*, producing a lemon flower with a fringed labellum and a downward tendency of growth.

TRIAL OF MICHAELMAS DAISIES.

The following awards have been made by the Council of the Royal Horticultural Society to Michaelmas Daisies after trial at Wisley.

FIRST-CLASS CERTIFICATE.

Nos. 150, 151, *King George* (Amellus) (A.M. 1914), sent by Mr. RUYS and Mr. W. WELLS, Junr.

AWARDS OF MERIT.

No. 141, *Wienholtzi* (Amellus), sent by Mr. RUYS; No. 148, *Rudolph Goethe* (Amellus), sent by Mr. RUYS; No. 152, *cassubicus* (Amellus), sent by Mr. RUYS; No. 139, *Mrs. Perry* (Amellus) (A.M. 1915), sent by Mr. RUYS; Nos. 144, 145, *Beauty of Ronsdorf* (Amellus) (A.M. 1913), sent by Mr. RUYS and Messrs. BAKER; No. 149, *rubellus* (Amellus), sent by Mr. RUYS; No. 107, *Bianca* (Diffusus) (A.M. 1909), sent by Messrs. BAKER; No. 110, *Katherine* (ericoides), sent by Mr. H. J. JONES; No. 118, *Silver Queen* (ericoides), sent by Mr. H. J. JONES; Nos. 1, 2, 4, *Lil Fardell* (Novae Anglae) (A.M. 1907), sent by Messrs. JONES and RUYS; No. 3, *Ryecroft Pink* (Novae Anglae), sent by Mr. RUYS; Nos. 5, 6, 8, *Mrs. S. T. Wright* (Novae Anglae) (A.M. 1907), sent by Messrs. JONES, RUYS and JONES; No. 9, *Mrs. Wheeler Bennett* (Novae Anglae), sent by Mr. JONES; No. 18, *Maid of Colwall* (Novi Belgii), sent by Mr. BALLARD; No. 37, *Antwerp* (Novi Belgii), sent by Mr. W. WELLS, Junr.; No. 40, *Mons* (Novi Belgii) (A.M. 1919), sent by Mr. W. WELLS, Junr.; Nos. 62, 75, *Anita Ballard* (Novi Belgii), sent by Mr. BALLARD and Messrs. BAKER; No. 79, *Heather Glow* (Novi Belgii), sent by Mr. BALLARD; No. 82, *Dick Ballard* (Novi Belgii), sent by Mr. BALLARD; No. 83, *Wonder of Colwall* (Novi Belgii), sent by Mr. BALLARD; No. 92, *Beauty of Colwall* (Novi Belgii) (F.C.C. 1907), sent by Mr. BALLARD; No. 166, *Bilston* (Novi Belgii), sent by Mr. W. SIMPSON, Wetherby, Yorks; No. 19, *Queen* (Novi Belgii), sent by Mr. JONES; No. 46, *Bruges* (Novi Belgii),

sent by Mr. JONES; Nos. 70, 71, *Blue Gem* (Novi Belgii), sent by Mr. BALLARD and Messrs. BAKER; No. 87, *Brightest and Best* (Novi Belgii) (A.M. 1918), sent by Mr. W. WELLS; No. 61, *Climax* (Novi Belgii) (A.M. 1908), sent by Mr. RUYS; No. 161, *Mrs. Frank Penn* (Pleaid type) (A.M. 1913), sent by Mr. JONES; No. 125, *Golden Rain* (virineus) sent by Mr. JONES.

HIGHLY COMMENDED.

No. 154, *Beauté Parfaite* (Amellus), sent by Mr. RUYS; No. 143, *Perry's Favourite* (Amellus) (A.M. 1904), sent by Mr. RUYS; No. 159, *Acris*, sent by Mr. RUYS; No. 102, *Ideal* (cordifolius), sent by Mr. RUYS; No. 111, *Golden Fleece* (ericoides) sent by Mr. JONES; No. 113, *May* (ericoides), sent by Mr. JONES; No. 116, *Mona* (ericoides), sent by Mr. JONES; No. 119, *Amy* (ericoides), sent by Mr. JONES; No. 121, *Blue Star* (ericoides), sent by Mr. JONES; No. 123, *Mrs. A. E. Underdown* (ericoides), sent by Mr. JONES; No. 26, *Hilda* (Novi Belgii), sent by Mr. JONES; No. 47, *Edith Mills* (Novi Belgii), sent by Mr. JONES; No. 76, *Cleopatra* (Novi Belgii), sent by Mr. BALLARD; No. 65, *Moonlight* (Novi Belgii), sent by Mr. BALLARD; No. 7, *Ryecroft*



FIG. 113.—FASCIATEE CHRYSANTHEMUM.
(See Scientific Committee.)

Purple (Novi Belgii), sent by Mr. RUYS; No. 22, *Ethel Ballard* (Novi Belgii), sent by Mr. BALLARD; No. 27, *Mrs. Twinam* (Novi Belgii), sent by Mr. JONES; No. 28, *Walloon* (Novi Belgii), sent by Mr. JONES; No. 29, *Lady Lloyd* (Novi Belgii), sent by Mr. BALLARD; No. 44, *Jupiter* (Novi Belgii), sent by Mr. BALLARD; No. 52, *Brussels* (Novi Belgii), sent by Mr. WELLS, Junr.; No. 57, *Mira* (Novi Belgii), sent by Mr. BALLARD; No. 69, *Grace Mary Lewis* (Novi Belgii), sent by Mr. BALLARD; No. 73, *Cardinal Mercier* (Novi Belgii), sent by Mr. JONES; Nos. 77, 78, *J. S. Baker* (Novi Belgii) (A.M. 1916), sent by Messrs. BAKER and Mr. BALLARD; Nos. 80, 81, *Rachel Ballard* (Novi Belgii), sent by Mr. BALLARD and Messrs. BAKER; No. 88, *Robinson*, V.C. (Novi Belgii) (A.M. 1918), sent by Mr. WELLS, Junr.; Nos. 90, 91, *Nancy Ballard* (Novi Belgii), (A.M. 1912), sent by Mr. RUYS and Mr. BALLARD; No. 146, *Lavanda* (Novi Belgii), sent by Messrs. BAKER; No. 165, *Miss Woodall* (Novi Belgii), sent by Mr. W. SIMPSON, Wetherby; No. 10, *pulcherrimus* (puniceus), sent by Mr. RUYS; No. 127, *virineus* (ericoides superbus), sent by Mr. RUYS; No. 129, *Dorothy* (virineus), sent by Mr. JONES.

COMMENDED.

No. 35, *Ada* (Novi Belgii), sent by Mr. JONES.

ANNUAL COREOPSIS.

The following awards have been made to Annual Coreopsis after trial at Wisley:—

HIGHLY COMMENDED.

Nos. 3, 4, *Drummondii*, sent by Messrs. BARR and R. VEITCH; No. 5, *Tiger Star*, re-selected sent by Messrs. WATKINS and SIMPSON; No. 6, *Tiger Star*, sent by Messrs. SYDENHAM; No. 7, *Tiger Star* (compacta radiata), sent by Messrs. BARR; No. 17, *nigra speciosa* re-selected, sent by Messrs. WATKINS and SIMPSON; No. 18, *Fire King*, sent by Messrs. WATKINS and SIMPSON; No. 20, *Tom Thumb Crimson King*, sent by Messrs. BARR; No. 21, *Crimson King*, sent by Messrs. WATKINS and SIMPSON.

SECOND EARLY POTATOS.

The following awards have been made to Second Early Potatoes after trial at Wisley:—

AWARDS OF MERIT.

Nos. 1, 2, 3, 4, 5, 6, 74, *Great Scot* (A.M. 1917), sent by Messrs. SUTTON and SONS, BARR and SONS, W. G. HOLMES, R. VEITCH and SON, DOBBIE and CO., TOOGOOD and SONS, J. CARTER and CO.; No. 7, *Warwick Castle*, sent by Messrs. SUTTON and SONS; Nos. 17, 18, 19, 20, *Ally*, sent by Messrs. W. G. HOLMES, DOBBIE and CO., R. VEITCH and SON, and SUTTON and SONS; No. 34, *Frankville Favourite*, sent by Mr. COGHILL; No. 51, *Di Vernon*, sent by Mr. FINDLAY.

HIGHLY COMMENDED.

Nos. 8, 9, 10, 11, 71, *King George* (A.M. 1917), sent by Messrs. TOOGOOD and SONS, SUTTON and SONS, BARR and SONS, DOBBIE and CO., and J. CARTER and CO.; Nos. 12, 13, 14, 15, 16, *British Queen* (A.M. 1905), sent by Messrs. TOOGOOD and SONS, BARR and SONS, R. VEITCH and SON, DOBBIE and CO. and FINDLAY; No. 29, *Berwick Castle*, sent by Messrs. SUTTON and SONS; No. 46, *Sir Edward Carson* (syn. *British Queen*), sent by Mr. SANDS.

COMMENDED.

No. 33, *Early Round*, sent by Messrs. STUART and MEIK; No. 43, *Early Market*, sent by Messrs. SUTTON and SONS; No. 63, *K. of K.* No. 2, sent by Mr. FINDLAY.

PORTSMOUTH HORTICULTURAL.

OCTOBER 27, 28, 29.—The annual autumn show of the Portsmouth Horticultural Society was held in the Town Hall, which was severely taxed to accommodate the exhibits.

The groups of Chrysanthemums were the chief attraction, and single Chrysanthemums a fine feature. Vegetables were thoroughly well represented, while trade exhibits added to the effect of the display. The committee and officers are to be congratulated on a glorious show, which was opened by the Mayoress, Mrs. J. Timpson.

CUT BLOOMS.

A silver cup, value £20, with a cash prize of £5, was offered as first prize for 36 Japanese blooms. Of three exhibits, Mr. H. Woolman, Shirley, Birmingham, had easily the best. The most noticeable varieties were Shirley Golden, an incurving variety of immense size, a rich golden colour, a seedling raised by Mr. Woolman in 1919; Mrs. Algernon Davis, Mrs. H. Tyso, W. Turner, Mrs. G. Monro, Victory, Golden Champion, and Mrs. E. Dove; Messrs. J. B. Groom and Sons, Gosport, were second with much smaller blooms. Mr. Woolman was quite unapproachable in the class for twelve Japanese distinct where he showed grand blooms.

Incurved varieties were fairly represented. Sir Dudley Clarke Jervoise, Idsworth House, Homdean (gardener, Mr. Cobbett) staged the best specimens among three entrants.

Single flowered varieties were splendidly shown. In the class for six vases of six blooms each Mr. W. Snook, Fratton, excelled with perfect flowers of Supreme, Molly God-

frey and Sweet Auburn. Mr. H. Snook, Fratton, 2nd, and Messrs. J. B. Groom and Sons 3rd. In the amateurs' division for this section the two previous winners reversed their position for twelve sprays; Edith Dymond, Winnifred Pay, Molly Godfrey and Mrs. W. Smith, white, were leading varieties in the premier collection. Phyllis Cooper, an intense yellow variety, was grandly shown in the second prize stand. Mr. H. Snook, with well developed flowers of Mabel Cooper, Gem, and Hermes, secured the leading position in the class for six varieties, three blooms of each.

The premier Japanese bloom in the show was a grand specimen of Mrs. Algernon Davis in Mr. Woolman's first prize exhibit of thirty-six blooms. Amateurs staged good exhibits in the various classes set apart for them.

Groups of Chrysanthemums in pots were numerous and most effectively arranged around the sides of the hall. The Parks Committee, Portsmouth (gardener, Mr. E. Soames), secured the challenge cup offered for a group occupying 60-feet space. The Japanese blooms were superior to many shown in the flower stands, while the plants were dwarf and clothed with healthy foliage. Mr. W. Jeffreys, Southsea, 2nd; Messrs. J. B. Groom and Sons, 3rd. No fewer than five competitors arranged a 60-ft. group of single-flowered varieties. The Parks Committee were again easily successful with plants ranging from 3 ft. to 6 ft. high, of such sorts as Mensa, Bertha Fairs, Metta and Supreme. Mr. W. Gill, Southsea, 2nd; the bulk of his plants were grown in beef tins!

To show the value of Chrysanthemums and autumn foliage as a floral decoration for a dinner table a class was provided for ladies only, the tables being 6 ft. by 4 ft. Four competed. Mrs. Hawkins, Cosham, was an easy first: with Source d'Or and its yellow sport pleasingly associated with trails of Ampelopsis Veitchii and Adiantum Fern. Miss Hawkins secured the second place with good blooms of the pale bronze Marjorie Lloyd.

Trade exhibits added much to the attractiveness of the show. The Barnham Nursery Co., Barnham, Sussex, arranged 80 dishes of grandly coloured Apples in front of the stage. Messrs. Toogood and Sons, Southampton, had an exhibit of high-class vegetables. Mr. Woolman arranged a group of Japanese blooms near the entrance. Messrs. S. Fay and Son, florists, Southsea, filled one corner of the hall with bouquets of Orchids, Carnations and Roses, and designs worked with Chrysanthemums and Lilies. Messrs. E. and E. Smee, Southsea, had baskets of daintily arranged Roses, Carnations and Chrysanthemums. Messrs. J. B. Groom, Gosport, showed Chrysanthemums in masses. Mention should also be made of the table plants, brilliantly coloured Crotons and Dracaenas shown by the Parks Committee.

EASTERN COUNTIES FRUIT SHOW.

THE Corn Exchange, Wisbech, was the scene of the Second Annual Eastern Counties Commercial Fruit Show on the 20th and 21st ult. Compared with the exhibition held at Cambridge last year, it may be said that, while the bulk was much smaller, owing to the lean crops, the quality was as good, and in some instances better. Seeing that the principal object is to bring forward the finest commercial fruits, packed in such condition as to insure the highest returns in the markets, varieties were not, of course, numerous, and cooking Apples largely predominated; there were very few Pears. The slope of the staging was, perhaps, on the low side, but the arrangements made by Mr. H. B. Teagle (hon. sec.), and an energetic committee were excellent.

The schedule called for four distinct types of packages—sieves, boxes, and barrels, with Peach boxes for choice dessert Apples and Pears. The judges, in making their awards, were governed by a basis which, so far as the fruits were concerned, gave 25 marks for size, 15 for colour, and 20 for condition; and for packing—10 for uniformity, 20 for quality of pack, and 10 for general appearance.

Dealing with it on the broadest basis to cover the entire show, it cannot be claimed that the

packing was of high class. It seemed that the workers had failed to grasp the crucial points which the basis of judging printed in the schedule was obviously intended to emphasise. Mixtures of size were very pronounced and numerous, with the inevitable result that there were many loose packages containing badly bruised fruits. Again, there were sieves packed so high on the one hand, or so low on the other hand, that they could never travel safely; while it can only be assumed that the Apples tumbled into some of the boxes, since no stretch of imagination conveyed an impression of packing. There were, however, notable exceptions, from which it is to be hoped that lessons were learned by the novice and the inexperienced.

In the class for a sieve of Bramley's Seedling, Mr. H. BARTON, Hollesley Bay, was first; Mr. H. BROWN, Somersham, second; and Mr. F. E. BUNNING, Medworth, Wisbech, third. The exhibits were numerous, the quality was splendid and the competition was consequently keen; but there was not much amiss with the decisions, save that colour had, perhaps, weighed overmuch. Mr. H. BARTON maintained his position in the class for a barrel, and was followed by Mr. F. E. BUNNING and Mr. W. WARNER, Guyhirn, Wisbech, as named. For a box, Messrs. BURMAN AND WELLS, Wisbech, were first; Mr. W. HUNTER, Upwell, Wisbech, second; and Mr. H. S. LITTLECHILD, Leverington, Wisbech, third.

Needless to say, Newton Wonder was magnificently shown, though not quite so numerous as its formidable rival. For a sieve, the prize-winners were Messrs. R. STEPHENSON, Burwell, Cambs.; CHIVERS AND SONS, LTD., Shippen Hill, Cambs.; and GARDNER BROS., South Brink, Wisbech, in the order named. In the class for a box, Mr. R. STEPHENSON held his lead with superb fruits weakly packed; Messrs. GARDNER BROS. came second with inferior fruits packed better than any other box in the show; and Mr. J. D. HAY, Bury St. Edmunds, was third.

Lane's Prince Albert made a fine display, both in sieves and boxes. In the first-named class Mr. R. STEPHENSON was first; Mr. HORACE LEDGER, Witham, Essex, second; and Mr. J. G. FAIRCLIFFE, Burwell, Cambs., third; while in that for boxes the awards went to Messrs. H. BURTON, J. G. FAIRCLIFFE, and R. STEPHENSON.

Mr. LUKE BOYCOTT, Acle, Norfolk, was first; Messrs. GARDNER BROS., second; and Mr. H. BARTON, third, for a sieve of Lord Derby, and all showed finely. Messrs. GARDNER BROS.' barrel of Lord Derby was probably the best example of this form of packing in the show; they were followed by Mr. A. E. MORTON, Upwell, Wisbech, and Messrs. MASTIN AND WHITE, as named.

In the class for a sieve of "any other cooking Apple," Mr. J. B. UDALL, Kelvedon, was first with Bismarck in wonderful form; Messrs. THE RUATON GARDENS, LTD., Clacton-on-Sea, second with Peasgood's Nonesuch; and Mr. H. BARTON, third, with Warner's King, both showing strongly.

Coming to dessert varieties, Worcester Pearmain was shown in limited numbers, owing to the late date, but in gorgeous colour. Mr. R. STEPHENSON was first for a box; Mr. F. PAGET, Norbury, Malvern, was second, some of his fruits—to the astonishment of many people—being bruised badly; and Mr. H. BARTON was third. In the class for a half-sieve, Messrs. LEAK AND MEEKE, Ware, Herts, were first, with fine fruits packed rather low; Mr. R. STEPHENSON was second; and Mr. H. BARTON, third.

For a box of Allington Pippin, Mr. H. BARTON was first with a grand exhibit; Messrs. THE RUATON GARDENS, LTD., second; and Mr. J. G. FAIRCLIFFE, third. Mr. H. BARTON also led in the class for a half-sieve, and was followed by Mr. E. J. PORTER, Haddenham, and Mr. J. G. FAIRCLIFFE, respectively.

Cox's Orange Pippin naturally attracted much attention, and the exhibits were worthy of study as well for the beauty of the fruits as for the excellence of the packing. For a half-sieve Mr. H. BARTON was first; Messrs. LEAK AND MEEKE, second; and Mr. H. GRANGER, Maldon, Essex, third. In the class for a single layer of any number in a Peach box, Messrs.

LEAK AND MEEKE were first; Mr. H. GRANGER, second; and Mr. H. BARTON, third. The winning box of 24 fruits was fine for colour, but the second of 12 fruits was in front for quality, and the decision must have been reached with some difficulty.

There were classes for a half-sieve, a box, and a Peach box of "any other dessert Apple"; Mr. H. BARTON easily won in the first class with Ribston Pippin, in the second with Charles Ross, and in the third with Ribston Pippin. The best-packed half-sieve in the show was found in this group; it was Blenheim Pippin, from Messrs. GARDNER BROS., unplaced.

There were only two classes for Pears, and competition was poor. For a Peach box of Conference Messrs. GARDNER BROS. were first, and Mr. A. AUGER, second; there was no comparison in quality between these exhibits. For a Peach box of "any other dessert Pear," Colonel B. J. PETRE, Westwick, Norwich, was a comfortable first with Doyenné du Comice, and Mr. H. GRANGER, second, with very fine Beurré Clairgeau.

THE ESSEX GROWERS and the SUFFOLK GROWERS alone faced the judges in the class for three cooking Apples, three boxes of each, and three dessert Apples, three half-sieves of each, open to associations in the Eastern Counties, and they were awarded first and second prizes as named, both showing splendidly. Essex was represented by Newton Wonder, Lord Derby, Bismarck, Charles Ross, Cox's Orange Pippin, and Allington Pippin, and Suffolk by Bramley's Seedling, Lane's Prince Albert, Mère de Ménage, Blenheim Pippin, Ribston Pippin, and Allington Pippin. A curious point connected with this class was that the boxes in the Essex group had not been nailed down.

Three classes had been arranged for the encouragement of Small Growers with three acres or under. In one, for a half-sieve of either Bramley's Seedling, Newton Wonder, Lane's Prince Albert, or Lord Derby, Mr. SIDNEY GOODWIN, Romsey St. Mary, was first with Lord Derby; Mr. H. PIERSON, Cottenham, Cambs., second, with Lane's Prince Albert; and Mr. S. HALL, Wisbech St. Mary, third, with Bramley's Seedling. For a half-sieve of any other cooking Apple, Mr. W. INGALL, Louth, was first, with Crimson Bramley, and Mr. H. MILLER, Maldon, Essex, second, with Peasgood's Nonesuch. For a half-sieve of any dessert Apple, Mr. W. INGALL was first with Royal Snow (surely a local name); Mr. H. PIERSON, second, with Allington Pippin; and Mr. H. MILLER, third, with Blenheim Pippin.

LAW NOTE.

FAILURE OF A SUNDRIESMAN.

A MEETING of the creditors under the failure of C. P. Clayton and Co., Ltd., horticultural and agricultural chemists, Enfield, Middlesex, was held on the 1st inst. The statement of affairs showed liabilities of £1,122 16s. 8d. all of which were due to unsecured creditors. The assets were estimated to realise £828 8s. 9d., from which had to be deducted £28 10s. for preferential claims, leaving net assets of £799 18s. 9d., or a deficiency of £322 17s. 11d. The assets consisted of stock in trade at cost, £610 16s. 6d.; office furniture, fittings, etc., £78 13s. 6d.; book debts expected to produce £69 5s. 4d.; motor vehicle, £55; and balance at bank £4 11s. 5d.

The company was incorporated on January 9, 1920, with a nominal capital of £2,000, divided into 2,000 ordinary shares of 20s. each. The company had issued 900 shares as fully paid, of which number 575 were issued for cash. The liquidation had taken place because the company did not possess sufficient capital to carry on the business. The two directors of the company were Mr. W. Scott and Mr. Clayton. The deficiency was accounted for by the loss on the trade.

It was unanimously decided by the creditors to confirm the voluntary liquidation of the company, with Mr. Westacott as liquidator.

Obituary.

M. Anatole Cordonnier.—The death is announced at Tourcoing, on the 3rd inst., of M. Anatole Cordonnier, the founder and proprietor of Les Grapperies du Nord, Bailleul, France. He was a most energetic and enterprising man for although he had no early training in horticulture, being a large and affluent cloth manufacturer at Roubaix, as soon as he realised the need for encouraging fruit culture under glass in France, he speedily set about the work, and in a short time founded one of the most important places of its kind. I first became acquainted with him in 1887 when he was engaged in organising a Chrysanthemum fête in Roubaix and thenceforth have followed his career with no little interest. The primary cause of his being specially impressed with the need for high-class horticultural produce was seeing some very fine Grapes in Covent Garden market, and being informed they were grown by Thomson's, of Clovenfords, he visited those famous vineries, and was so much struck with what he saw that he was not content until he had been to several other similar establishments, with a final result that his nursery at Bailleul was one of the most modern and up-to-date places of its kind. In his early days Chrysanthemums grown on the big bloom system such as had never been seen in France before were cultivated by him in large quantities. Strawberries, Tomatos, Plums, Grapes and other fruits were also largely raised under glass, and were exhibited in the most artistic and effective manner at the Paris Spring and Autumn Shows. The area covered by M. Cordonnier's nursery was a large one, and some particulars of it were given in the columns of this journal when I paid a visit to it on my way to the Paris International Exhibition of 1900. To-day, alas! that splendid monument of human energy, foresight and determination is little better than a heap of dust and ashes. The fighting around and for the village of Bailleul, a place unknown to most English people before the war, has resulted in Cordonnier's nursery, we are told, being blotted out of existence, and the death of its owner coincides strangely with the termination of his great undertaking in horticulture. Although a commercial man, M. Cordonnier could wield the pen in a very effective manner. He contributed many articles to the Press, and was the author of two works of wide circulation, *Le Chrysanthème à la Grande Fleur*, and *Abrégé du Chrysanthème à la Grande Fleur*. He also wrote *Culture Fruitière sous Verre*, and *Les Engrais Pratiques en Horticulture*. He was appointed for his services in horticulture an Officer of the Mérite Agricole and a Knight of the Legion of Honour. The funeral service and interment took place last Saturday, the body being deposited in the family vault at Bailleul. The deceased was in his 78th year and a widower; a large family survives him. C. H. P.

REPLY.

ROSES FOR HEDGES.

R. V. H. should erect a light trellis in front of the objectionable wall he wishes to hide and plant some of the robust-growing and free-flowering Wichuraianas, such as American Pillar, which is more or less evergreen. This is a handsome variety, and would quickly and effectively hide the wall, and give a wealth of blossom of great beauty. The long shoots could be trained horizontally along the fence, and when once the foundation of these main branches was secured a system of close spur pruning of each year's shoots would ensure a full crop of flowers. I know of no variety except the Trier type that would bear the close trimming necessary for a hedge and give even a reasonable flower crop. The clipping should be postponed until the first flower crop is over in July. E. M.

[In the public Rose Garden at Westcliff, Essex, fine hedges are formed of William Allan Richardson and Gruss an Teulitz (see *Gard. Chron.*, August 29, 1914, p. 157). Eds.]

ANSWERS TO CORRESPONDENTS.

CINERARIAS WILTING: E. J. G. The mycelium of a fungus was present in the stems of your Cinerarias, but it is impossible to state if that was the cause of the trouble. The plants may have started to decay through some wrong cultural treatment, and the presence of the fungus is probably only a secondary infection and not causal.

CUCUMBERS UNHEALTHY: H. W. R. The spotting of the leaves on your Cucumber is not due to organic disease caused by a fungus, nor is eelworm present at the roots. The trouble therefore must be looked for in some wrong cultural treatment which those on the spot will be best able to determine.

ERADICATION OF CLOVER FROM LAWNS: T. A. In the experiments referred to in the leading article on p. 223, it was found that by the application of 1½ lb. of sulphate of iron dissolved in water and applied over an area of 20 square yards, the White Clover in the grass as well as the Dandelions was killed. The best mixture would be the one containing 1 part of sulphate of iron, 1 part of sulphate of ammonia and 2 parts of coarse sand, broadcasted at the rate of 4 ozs. to the square yard. The nitrogenous fertiliser would have a beneficial effect in making the grass grow freely.

MELONS AND CUCUMBERS DISEASED: W. H. C. The plants are affected with the fungus *Fusarium albo-atrum*, causing what is known as wilt disease. Plants that are attacked should be destroyed by burning, and Cucumbers or Melons should not be grown in the same soil again. You would be well advised also to sterilise by baking the compost in which these crops are grown next season.

MILDEW ON VINES: N. Next month, as soon as the Vines are pruned, dissolve half a pound of soft soap in a gallon of water and mix with it as much flowers of sulphur as will produce the consistency of thick paint. Dress the Vines thoroughly with this, and use sufficient to fill the crevices, and especially about the base of the buds. Unless great force is used it will do no harm to the buds if they are painted soon after pruning. Should a second application be thought desirable it is advisable to give it not later than the middle of January. The sulphur will retain most of its fungicidal powers throughout the following spring, but, of course, the Vines must not be syringed. Sulphur is most effective when it becomes heated to 80°, when it throws off an effective vapour. At a shade temperature of over 90° this vapour is dangerous to plant life. In the spring you should watch carefully for the first speck of mildew, and syringe the parts affected and those near them with a solution of one ounce of soft soap to one gallon of soft water and sulphur mixed as previously advised. This should be applied in the form of a spray. Probably the reason you found dry sulphur ineffective, supposing a sufficient quantity was applied, was that during the past summer there was not sufficient sun heat to give the desired temperature.

MUSHROOM BEDS: H. If you have covered your Mushroom beds with one to two inches of soil you have done the right thing, and you may expect to see the Mushrooms coming through about six weeks after spawning, provided, of course, the bed is in proper condition; that is, warm and moist beneath the casing. If the soil is dry, it should be carefully watered with tepid water from a fine-roset can. In regard to bulbs of *Narcissus ornatus* and Sir Watkin, these will not suffer if lifted and replanted at once, even though they are showing green at the tips. Of course, you should not plant when the ground is hard with frost.

NAMES OF FRUITS: A. C. 1. Autumn Bergamotte; 2. Beurré Superfin. H. G. S. *Hand-dudno*, Dumelow's Seedling (syn. Wellington). T. R. J. 1. Cox's Orange Pippin; 2. Allington Pippin; 3. not recognised, possibly a

local seedling; 4. Dumelow's Seedling (syn. Wellington).

NAMES OF PLANTS: A. P. 1. *Choisya ternata*; 2. *Colutea arborescens*; 3. *Phytolacca decandra*; —J. N. 1. *Zenobia speciosa* var. *pulverulenta*; 2. *Z. speciosa*. J. L. 1. *Acer campestre*; 2. *Rhamnus Frangula*; 3. *Quercus Ilex*; 4. *Neillia opulifolia*.—W. R. P. 1. *Abies nobilis* var. *glauca*; 2. *Abies Nordmanniana*; 3. *Cupressus Lawsoniana*; 4. *C. L. var. erecta viridis*; 5. *Cedrus Deodara*; 6. *Tsuga canadensis*; 7. *Pseudotsuga Douglasii*; 8. *Cupressus Lawsoniana* var. *gracilis*; 9. *Cedrus atlantica* var. *glauca*; 10. *Cedrus atlantica*; 11. *Pinus Strobus*; 12. *Cedrus Libani*.—W. S. *Wickham*. 1. *Sequoia gigantea*; 2. *Chimonanthus fragrans*.

PRIMULA MALACOIDES: J. W. The plants are eaten by some grub, but no insect was present on the specimens sent us. It is possible that wire worms were present in the potting soil; these may be trapped by placing pieces of vegetables, such as Carrots, Turnips or Potatoes, on the surface of the pots. Weevils may also be responsible. These should be sought for when it is dark, as they hide by day.

RED CURRANTS WITH SPOTTED LEAVES: D. W. S. The foliage is attacked by leaf spot disease caused by the fungus *Gloeosporium ribis*. Next season spray the plants with either very dilute Bordeaux mixture or potassium sulphide in solution. The spraying should be done when the leaves are in an early stage of development.

R.H.S. EXAMINATIONS. E. B. Full particulars of these examinations may be obtained on application to the Secretary, Royal Horticultural Society, Vincent Square, Westminster. A stamped addressed envelope should accompany the application.

ROSES ATTACKED BY INSECTS: J. D. The "centipede" you refer to is a millipede, and is probably not primarily responsible for the trouble, for millipedes do not usually attack large, tough tissues, such as the stems of Roses. They will, however, gain entry into wounds already made, and cause secondary trouble. The mites enclosed are merely scavengers. Fungus was present, but a detailed examination failed to reveal any direct causal organism. The lesions on the roots suggests the action of some animal, such as a field mouse, but you will be in a position to know whether this is a reasonable suggestion as to the cause of the trouble. Unsuitable cultural conditions may also be responsible for the death of the plant, and then an attack by millipedes would produce somewhat similar symptoms to those your specimen exhibits.

STORING DAHLIA ROOTS: J. E. Dahlia roots should not be lifted for storing until frost has blackened the foliage and the soft stems of the plants. If the plants are cut down with a knife before frosts appear, the roots are not likely to keep so well in the store, as when Nature has been allowed to take a hand in the business. After the leaves and stems have been blackened by frost each Dahlia plant should be cut down to about six or eight inches from the ground. Choose a fine day for lifting the roots; do this work very carefully, so that no damage is done to the fleshy roots, and lay each clump on its side until lifting is completed. Remove all the soil from the crown or collar of the plants and place the roots in a dry and airy place for a few days. See that the proper label is securely attached to each plant. The roots may be stored on a wooden or earthen floor in a frost-proof cellar, with soil packed about the tubers, or in boxes placed in a cool but frost-proof shed. An excessively dry storeroom is undesirable as shrivelling would take place; on the contrary, a very damp shed or cellar is equally unsuitable as in either case damping might occur.

Communications Received.—H. B.—C. F.—E. S.—Experienced.—T. A.—V. T. J.—G. G.—B. J. T.—E. B.—A. F. G.—H. G.—E. M. S.

THE

Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.80°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, November 17, 10 a.m.: Bar. 30.4, temp. 47°. Weather—Fine.

Reginald Farrer.

By the death of Mr. Reginald Farrer at the early age of 40, the small band of modern hardy plant collectors loses its most picturesque, versatile and distinguished member. Those who had the privilege of knowing Mr. Farrer and his work will not be slow to recognise his claim to distinction. Although he was a first rate observer and cleared up many technical points, Mr. Farrer was not a scientific man. He was first and foremost an artist, not merely looking at things from a new angle, but creating a new idea. He did not so much offer a theory as preach a truth. In May of this year, the Royal Geographical Society awarded him the Gill Memorial Medal for his journeys in Kansu; but such geographical work as he did was "by the way"; it was never allowed to interfere with his main object—namely to secure the best plants for English gardens, and to make the non-travelled English public see those plants growing as they grow in the cold mountains of Asia. Nor did he ever succumb to the fatal temptation to collect a plant simply because it was new. It was enough for him that a plant was beautiful and not yet in cultivation. He was a thorough collector. His specimens were always beautifully preserved, and fully described, his seeds always germinated. His collections, made with Mr. Purdom in Kansu, amounted to some 800 species. Those made with Mr. E. Cox in Upper Burma, numbered about the same up to the end of 1919; to which must be added several hundred species collected in 1920. It has been said by those qualified to judge, that of all modern plant collectors, including those two outstanding figures Mr. E. H. Wilson and Mr. George Forrest, Mr. Farrer sent

home the best seed and obtained the best germinations. Of his plants, several hundred species are new, and several score are in cultivation; only this year two of them—*Gentiana Farreri* and *Lilium Farreri* have taken the horticultural world by storm. Mr. Farrer was a recognised authority on rock plants, and an expert gardener; his last book, *The English Rock Garden*, will be a standard work for some time to come. But he was much more than a technically successful collector and horticulturist. He had a remarkably sensitive perception of natural beauty, which, combined with a subtle command of the English language, made the plants he described live. He was also a splendid lecturer, and in 1917 held a large audience at the Royal Geographical Society entranced by his brilliant and fluent account of his first Kansu journey.

Though it is as a novelist that Reginald Farrer is best known to the outside public, this is not the place to speak of his fiction. He wrote naturally, prolifically, but his novels too were only a side interest. His horticultural



THE LATE REGINALD FARRER.

tural and travel writings include the following:—*My Rock Garden*, *Alpines and Bog Plants*, *In a Yorkshire Garden*, *Among the Hills*, *King Lavin's Garden*, *In Old Ceylon*, *The Garden of Asia*, and *On the Eaves of the World*. Farrer's style was entirely original. He was prone to unpardonable exaggeration and to an overwhelming torrent of epithet which at times quite obscured his meaning, and to some people was irritating. But he was stimulating and vivid, refreshingly unexpected; never dull. It is not too much to say that by his writings alone he has left an enduring mark on English gardening. His travels outside Europe included a trip round the world via Canada, China and Japan, in 1903; Ceylon, 1907; to Kansu, with Mr. Purdom, where he spent two years, 1914-16; and two journeys on the North East Frontier of Burma, to Hpimaw with Mr. E. H. M. Cox in 1919, and alone to the Ah-kyang Valley in 1920.

To friend and foe alike he was outspoken and fearless. But his words, written and spoken, made clean wounds which healed quickly. He never unnecessarily hurt a friend, and his humour and kindness were always at hand to smooth ruffled plumes after

a joust. He was a rare scholar, deeply read and widely travelled, and his sparkling conversation made him a delightful companion. He numbered amongst his friends many distinguished men of the day, and his cheery optimism and a whimsical turn of speech for each difficulty carried him over every obstacle. His most enduring monument is not that trilogy of first class hardy plants that by his skill and courage he has bequeathed to us for all time—*Gentiana Farreri*, *Lilium Farreri*, *Nomocharis Farreri*—but his own undying enthusiasm for beautiful flowers which he has planted in so many hearts. Other novelties he introduced in addition to those mentioned, are *Primula alsophila*, *P. viola-grandis*, *P. riparia*, *Meconopsis lepida*, *M. psilonomma* and *Rhododendron tapeinum* among many others. In a letter to a friend from the Lisu village of Nyatadi, shortly before his death, he writes referring to the terrible climate:—"Not but that everything goes well; so far all my fears have been falsified, and I continue a great deal happier and more serene of heart than I ever felt last year. And solitude proves not a trial but a most blessed comfort. August is now ending and the discovery work of the year is now practically over, yet thanks to diligent self-observation and decent self-preservation, I am still in far heartier fettle and less fagged than I was by July in the infinitely less trying conditions of last year. This defies reason, for certainly both climate and country are heart-breaking." Here we have a glimpse of Farrer at his best, triumphing by his indomitable spirit; climbing to greater heights than the Meku-ji. Reginald Farrer died as he would have wished, in harness and in the hour of his success; and now that he has crossed a greater divide than the Salween-Irrawaddy, we who have looked on throughout his single-handed struggle in the misty mountains, can realise that though we are poorer by his death yet are we the richer by his inspiration.

The gardening world, as well as botanical science, suffers an irreparable loss by the death of Mr. Reginald Farrer. He died of diphtheria on Oct. 16, while travelling on the frontier range between Burma and China, nearly due east from Fort Hertz. His love of plants was his absorbing passion, and his chief joy was to see plants growing in their wild state. For years in succession he used to make annual journeys to the European Alps; then in 1914-15 came his great expedition with Purdom to the Kansu-Tibetan border. After the Armistice he started off again on another trip to the East, this time to the frontier range where he met his death. As his companion throughout the whole of 1919. I know that as a collector and a traveller he was unique. He saw his goal in front of him, and nothing could keep him from attempting to reach it. I have never seen anyone so wholehearted, and he considered no difficulties too great to be surmounted. He saw everything for himself, and collected everything himself. He was indefatigable. He has enriched our gardens with many plants of supreme quality, some of which have been called after him, and will act as a worthy memorial to his name, notably *Gentiana Farreri*, that glory of its race, and *Primula Farreriana*, both from the Kansu expedition; *Nomocharis Farreri* and *Cremanthodium Farreri* from his last journey. He had a supreme contempt for those who were selfish over their plants. His one aim on discovering something which he considered worthy was to see it in every garden throughout the country. He always looked upon plants as human, and he invariably brought out this point in his writings; I think it is safe to say that there is no writer on gardening who has made his subject live before our eyes as he has. His death is a loss which cannot be realised at once. It is only in the years to come that we shall be-

gin to understand what a tremendous influence his never-flagging spirit had on the horticultural world. He died while engaged in the work he loved among the hills and flowers. May his memory ever remain green in our thoughts. *E. H. M. Cox.*

Presentation to Mr. G. McGlashan.—For a number of years past Mr. G. McGlashan has had charge of Viscount de Vesci's gardens and grounds at Abbeylax, Queen's Co., Ireland, which he is leaving to take charge of the gardens at Gosford House, East Lothian, the seat of the Earl of Wemyss. His many friends took advantage of the occasion to show their esteem for him. The employees on the estate gave him a silver cigarette case and about one hundred of his friends presented him with a gold watch chain and pendant, in addition to a morocco leather purse, well filled with Treasury notes. The presentation of the chain and purse was made by Mr. James Morton, J.P., at the residence of Mr. McWilliam, steward to Miss Staples.

Flowers for Remembrance.—During Armistice week, when the thoughts of the whole nation were turned to remembrance of those who laid down their lives for the cause of liberty during the Great War, many thousands of people expressed their esteem and love for the departed through the medium of flowers. At local shrines throughout the country, floral tributes of affection and regard were abundant; while the national shrine—the Cenotaph in Whitehall—was, and still is, surrounded by an extraordinary wealth of flowers, of which it has been estimated there are no fewer than 100,000 separate emblems. King George V., the Prince of Wales, and other members of the Royal Family, the Prime Minister and other notable people, placed tributes at the base of the Cenotaph, and among the many others was one from the National Union of Horticultural Workers, which consisted of a design 4 ft. high and 3 ft. wide, composed of yellow and crimson Chrysanthemums, bordered with Laurel leaves, the whole representing the badge of the Union. The inscription was as follows:—"To the memory of the one hundred and five members of the National Union of Horticultural Workers who died for their country."

Viburnums in the Arnold Arboretum.—The last Viburnum to flower in the Arnold Arboretum is the American species, *V. Canbyi*, which produces blooms in July, two months after the blooming of the earliest species, *V. alnifolium*, in May. Of the three allied East American species, characterised by their blue fruits, *V. Canbyi* is the handsomest, *V. dentatum* the earliest, with *V. venosum* intermediate between it and *V. Canbyi*, which last species is sometimes regarded as a variety of *V. venosum*. *V. Canbyi* seeds freely, and hence should become more generally cultivated than is now the case.

Lancashire Potato Trials.—*Farmers' Bulletin* No. 32, published by the County Council for the County Palatinate of Lancaster, contains a useful summary of the results of trials carried out in 1918 and 1919 of cropping and cooking quality of the most promising of wart resistant Potatoes. As reported already in these pages *Ally* stands at the head of the list of yields. Its average in 1918 and 1919 was 12 tons 10½ cwt. per acre as against *Kerr's Pink*, 12 tons, 0¾ cwt., *Great Scot*, 11 tons 15½ cwt., and *Majestic* 10 tons 10½ cwt. A point of some importance brought out in the 1919 trials is the fact that in that year when blight was almost non-existent in Lancashire, *Arran Comrade* suffered more than any other of the varieties under trial. The trials are to be continued and extended during the coming year.

War Memorial at the Versailles Horticultural College.—On Sunday, October 31, two large marble slabs, commemorating the names of 125 Versailles students who had fallen in the war, were unveiled in the hall of the College, in the presence of representatives of the Minister of Agriculture and the Minister for War for

France. The proportion of killed among past and present Versailles students was sadly large, representing more than 25 per cent. of those who joined the forces; thus the Horticultural College paid a heavy tribute to the war!

The American Iris Society.—The first bulletin issued by this Society deals with "The Culture of Irises in the United States," and comprises a number of short articles contributed by experts and edited by Mr. R. S. Sturtevant, the secretary of the Society. In the introduction the beginner in Iris-growing is advised as to the choice of varieties in the several sections—from the earliest dwarf *pumila* hybrids to the late-flowering hybrids. In his article on "Iris Culture for the Mountains and Plain Regions," Mr. D. M. Andrews refers to *Iris missouriensis*, the only representative of the *Apogon* group, which ranges eastwards and northwards from Colorado, rising to an altitude of 8,500 feet and occurring in deep blue, pure white, as well as lavender blue forms. The series of brief articles bearing on the cultivation of the several groups should be welcomed by the members, and should serve to attract many new adherents to the cult of this genus of flowers.

Autumn Flowers in Galloway.—From Monreith, Sir Herbert Maxwell writes:—Notes on the gardens of one's friends, such as that by Mr. Elwes, on page 236, are refreshing. I wish we had more of them. The soil and climate of Colesborne differ so widely from those of Galloway that it may be of some interest to compare results of a benign autumn in the two districts. We have not yet (13th November) had a single degree of frost, and there is still a good deal of blossom on shrubs and herbs. I jotted down the following this morning among the less common species. Shrubs:—*Rhododendron nobleanum*, *Desfontainia spinosa* (second bloom), *Eucyphia cordifolia*, *Mutisia decurrens* (*M. ilicifolia* finished last week), *Escallonia phillipiana*, *E. exoniensis* and *E. macrantha*, *Fatsia japonica*, *Rosa bracteata*, *Berberidopsis corallina*, *Alyrtus communis*, *Abutilon megapotamicum*, *Lardizabala biterata* (these last five are on walls), *Cornus paucinervis*, *Cistus recognitus*, *C. corbariensis*, etc., *Veronica parviflora* and *V. anomala*, *Senecio Huntii* and *S. Grayi* (second bloom), *Hypericum Hookerianum*, *H. patulum*, *H. tridorum* and *H. moserianum*, *Myrtus communis*, *Clematis lanata*, and *Hydrangea hortensis*. Herbs:—*Achillea Aegyptiaca*, *Agapanthus umbellatus*, *Scabiosa caucasica*, *Convulvulus Cneorum*, *Geum Borisii*, *Amaryllis Belladonna*, *Senecio pulcher*, *Aconitum Vilmosianum*, *Primula helodoxa*, *Polygonum vacinifolium*, *Lavatera Olbia*, *Alsömeria pulchella* (*psittacina*), *Rudbeckia maxima*, *Myosotis dissitiflora*, *Tropaeolum tuberosum*, *Prunella grandiflora*, *Schizostylis coccinea*, and *Cheiranthus linifolius*.

Chrysanthemum Congress in Paris.—The annual Congress of French Chrysanthemum Growers was held at Paris in the offices of the French National Horticultural Society on October 27, under the presidency of Monsieur Viger, assisted by M. Momméja, the President of the French Chrysanthemum Society. Interesting papers were read by Messrs. Pieph, Durand, and Buisson-Metra, on the subjects of the dates for disbudding, pinching, and the taking of cuttings, for the principal varieties. Monsieur Momméja urged that, as a remedy for the present dearth of new varieties, every possible method should be adopted for the protection of raisers. As a remedy for insect pests, spraying with Capsicum was suggested, and M. Décault recommended permanganate of potash in the proportion of 2 grammes to a litre of water in the soil, and half a gramme per litre on the leaves. M. Chiffot described the damage caused among plants by *Septoria*, and the appearance in Brittany of a new insect, which is destroyed by means of a solution of sulpho-carbonate of potassium in the proportion of five or six grammes to a litre of water. Some of the members visited M. Momméja's most interesting museum, which contains solely objects relating to the Chrysanthemum and the part it plays in science, literature, and art.

Cattle Food from Seaweed.—Owing to the great scarcity of feeding stuffs, brought about through the exigencies of the war, the Danes have utilised certain seaweeds for cattle food. The chief plant employed is the Sea Wrack, *Fucus vesiculosus*. This plant is abundant all over the world and according to the *Journal of the Royal Society of Arts*, when certain mineral substances which spoil the taste are removed it makes palatable food for cattle. The plant is thoroughly washed to get rid of the salt, then it is treated with steam, preferably under rather high pressure, which causes the cells to burst and allows the protoplasm to come out. This mass is placed under high pressure and formed into cakes, which are dried in a vacuum and ground into a coarse powder. The juice of the mass is boiled in a vacuum to a high grade of concentration which causes the salts to crystallise, and they are separated from the juice by means of a centrifugal separator. The juice is then mixed with the powder, and the mixture is pressed into pieces of suitable size. The analysis of the food is as follows:—Water, 5 per cent.; protein, 13.12 per cent.; fat, 1.07 per cent.; digestible carbonic hydrate, 66.76 per cent.; cellulose, 9 per cent.; mineral salts, 5.03 per cent. The analysis would seem to show this food to be nourishing, and cattle eat it willingly. It may be mixed with oil cakes.

Appointment for the Ensuing Week.—Thursday, November 25:—Royal Botanic Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Chandler's Nursery, Fauxhall.*—The Chrysanthemums at this establishment are now in full bloom; and those who wish to increase their collections, or see these handsome flowers in perfection, should take any opportunity, during their continuance in flower, of inspecting them. The progress towards perfection in the Chrysanthemum is slow, yet every season one or two varieties are added, which either, in quality or colour, bring it nearer to perfection. Among the new sorts there appear to be no new varieties to interfere with the old favourites in the class of white flowers; *Surprise*, *Vesta* and *Lucium* still take precedence, followed by *Victory* and *Defiance*. Those having a blush tinge have received a good addition in a flower named *Madame Hardy*, a full flower, having broad petals; *Celestial*, *Queen*, and *Princess Marie* are three well-known favourites in this class. *Letitia Buonaparte* is also a showy variety; and a new specimen named *Emily Lebois*, a pinky lilac, promises well. The gay and very pretty little flower, *De Crique*, deserves notice; and *Queen Victoria*, lilac, proves a decided acquisition to its class. *Louis-Phillippe*, *Malvina*, and *Campestron*, are three fine specimens in the purple class; *Sappho*, a reddish brown, and *Isolice*, a rosy brown, are two flowers distinct in colour, full, and very pretty; *Annie Jane* is also distinct and good. *Napoleon*, a purplish brown, is too quilled. *Queen of the Yellows*, *Annie Saltier*, a bright sulphur, and *Adventure* maintain a prominent situation among the yellows. *Marshal Soult* and *David* are also both good specimens in the same class. *Queen of the Gipsies*, orange and brown, proves to be a good and distinct variety, and a new flower named *Orlando*, a large incurved buff, promises to make a good addition to this class. *Striatum*, having a white ground with very narrow stripes, was not sufficiently expanded to enable us to judge of the general appearance of the flower. Those we have noticed are among the newest and most prominent of the Chrysanthemums shown at this establishment; a large house is devoted to the exhibition of their gay flowers, and a fine effect is produced by the manner in which they are displayed, one row rising above another, forming a gaudy bank. The Camellias are in a healthy condition, and promise a fine show in due season. *Gard. Chron.*, November 22, 1845.

Publications Received.—*The Practical Book of Outdoor Rose Growing* (a garden edition and edition-de-luxe). By George C. Thomas, Jr. Philadelphia: J. B. Lippincourt Co. Price of the garden edition. 12s. 6d. net.

NOTICES OF BOOKS.

The Walnut in France.

THE culture of the Walnut in France is an important one, and in some districts is the principal horticultural crop. It has hitherto been difficult to obtain much information as to the extent of this culture, and still more to find any details as to the varieties grown.

A small book by M. E. Huard du Plessis was published in 1867, but very little information as to varieties was given. The present work by M. Lesourd* therefore fills a gap, and will be found to contain a mass of valuable information as to the Walnut and its culture in France. How important this is is shown by the fact that the total value of the crop was estimated at over 22 million francs in the year 1915, and in 1911 it exceeded 28 million francs.

The author gives a good description of the Walnut botanically, and describes in detail the fruits of some 21 varieties. No description of the leaves or other parts of the tree is given, except the early or late flowering habits—but the nuts are fully detailed and figures of many are given.

It is notable that many of the varieties are of extremely local range, and will not thrive except under specially favourable conditions; it would therefore be useless to attempt to introduce most of the varieties from the Midi or the South into this country. Full instructions are given on the climate and soil necessary, and also the manures which are apparently very needful to produce the finest fruits.

Other chapters deal with the extraction of oil; drying and use of the wood, etc.

The book is a small octavo, and is printed on poor paper and unbound. It is so far as we know the only French work giving so much information on the Walnut, and will therefore be welcomed by all who are interested in this subject.

WANTED: A HORTICULTURAL BOOKSELLER.

I can quite sympathise with *A Book Collector* for I, too, have suffered. But I wonder if besides being a book collector he is also a business man?

We have Quaritch, Dulau, Wesley and Wheldon, each of whom has a department specially devoted to horticultural and botanical books, besides several others who have taken up this kind of bookselling, and surely they leave no room in the trade for a rival who should devote himself wholly and solely to satisfying the wants of your correspondent and others like-minded.

The last paragraph of his article is optimistic and prophetic. He hopes to live long enough to meet his ideal, and promises good fortune to such a one; and his own custom, which is not to be despised. His hope will, I fear, never be realised.

It makes me feel as if I should, in the event of misfortune befalling me, like to open such a business. At present my occupation is more certain and unquestionably more lucrative, although the other might be more to my taste. It is many years since I started book collecting; it cannot be less than thirty-five, and I do know from bitter experience how disappointing it is to wait year after year for some old book, to see it mentioned in a catalogue, write off for it at once, and get the reply—"Sold."

How much nicer it would be if one could take a walk down the Strand, Oxford Street or elsewhere and simply go to the bookseller specialist for what one has sought for many years in vain, see him go straight to a shelf and take it down, so that on paying the price the happy collector could walk away with his prize! Alas! that in the ordinary nature of things is a dream—it would rob collecting of half its joy and certainly of many surprises.

**Le Noyer*, by F. Lesourd, Bibliothèque du Cultivateur.

To advertise one's requirements is always a last extremity, it causes a flutter among the knowing ones in the trade; raises the price and helps to keep it up. I have just done as I have done many times before, sent a list of desiderata to a Continental book dealer for some volumes I fancy I want. Of course, in due time, after keeping me on tenterhooks and utterly exhausting my temper and patience, a report of two of the very things I least require, and the least valuable, will filter through, and if I am prompt they may ultimately find a place on my already overcrowded shelves. But those bibliographical treasures seriously and urgently required that have been diligently sought for twenty years or more will, it is safe to say, not be among them.

How could the starting of such an establishment by an energetic man having a real knowledge of this class of literature help us? If the goods are scarce he would be only another competitor in the field. He would have to find a suitable place, pay rent and taxes, get an attractive and saleable stock together, and advertise to make himself and his shop known to the class of buyer to whom he would appeal.

And when all that were accomplished, instead of being able to maintain a nicely

THE LILY PONDS AT WISLEY.

THE series of pools at the foot of the rockery at Wisley constitute one of the prettiest features in the gardens at all seasons, and they appropriately divide the rock garden itself from the wood adjoining. Lying in a snug, warm spot, the various subjects, planted both in the water and on the banks, thrive amazingly well, and Gunneras in particular attain magnificent proportions.

The pools are planted mainly with *Nymphaeas* and *Aponogeton distachyon*, which is seen in full flower in the one depicted in the accompanying illustration in Fig. 114. The Water Lilies provide a glorious feature throughout the summer, and the large white *Nymphaea Gladstoniana* was flowering well in mid-October this year. On an island in one of the ponds are three fine trees—*Salix regalis*, *S. babylonica* and *Alnus glutinosa* var. *asplenifolia*. The banks of the ponds and margins of the little streams connecting them are planted with *Iris siberica* and *I. Kaempferi*, which in their season transform this part of the garden into a floral fairyland. Quite near the water clumps of *Caltha palustris* and the larger flowered *C. polypetala* contribute to the floral beauty in their seasons, and there are numerous



[Photograph by A. E. Sims.]

FIG. 114.—APONOGETON DISTACHYON IN ONE OF THE LILY PONDS AT WISLEY.

selected stock of rarities to suit the wants of all kinds of buyers just whenever they choose to walk in and pick up what they wanted, some American dealer would swoop down and clear out the whole available stock in ten minutes at prices which the suggested caterer for *A Book Collector* and others of that ilk could never dream of refusing, and we should all be left in precisely that position best described in the command of my old drill instructor, "As you were." C. Harman Payne.

I was interested in *A Book Collector's* regret at not being able to secure copies of certain gardening books he was anxious to possess. He did not say what periodical he advertised in, but as the *Gardeners' Chronicle* is the leading horticultural weekly paper and read by the majority of gardeners, one can scarcely imagine it was in this he made his wants known, as so many would be only too glad to dispose of their library now that the cost of living is so high. Has *A Book Collector* tried Messrs. W. and G. Foyle, 121-125, Charing Cross Road, S.W., who catalogue a great variety of gardening books, including some of those mentioned? J. Mayne.

other plants of a water-loving nature. A little rustic bridge, which gives approach to the rockery, is covered with *Wistaria multijuga*, that flowers freely in early summer, but the most persistent flowerer is the *Aponogeton* referred to, for it brightens the water with its fragrant blossoms every season from spring until late autumn. This plant is said to be a pest in its native country owing to its dense growth choking the streams. Although it grows and seeds freely at Wisley, it is not so vigorous as in some other places, owing, possibly, to the presence of lime in the water of the Wisley ponds. The largest clump of *Gunnera manicata* forms a most imposing group, and beside it is another of the slightly smaller species, *G. scabra*, which has more deeply cut leaves. These plants are not perfectly hardy and are given a little protection from frost in winter and cold winds in spring. The smallest species, *G. magellanica*, might well be passed unnoticed as the leaves are barely 1½ inch across and close to the ground. Other fine plants in the vicinity of the ponds are *Arun- dinaria nitida* and clumps of *Osmunda regalis*, while amongst the numerous flowers which thrive on the banks are *Orchis latifolia* and hosts of hardy *Primulas*, including *P. japonica*. A. E. Sims.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

Seedlings.—Houses containing small seedlings of *Cattleya* and allied genera should be kept warm and moist in order that the plants may not receive a check to growth. An average temperature of 65° should be maintained, and the plants should be exposed to all the light available; therefore, if the roof-glass is dirty it should be washed both inside and out. Keep a close watch for thrips, and if found to be present vaporise the house on two nights in succession. If allowed to remain even for a short time these pests will do irreparable damage. If any of the *Cattleya* family or *Cypripediums* need re-potting the work should be done forthwith. Continue to prick off seedlings into store pots as they become ready for transference. Seeds may still be sown, retaining a small quantity until the days begin to lengthen, in case of failure.

Sobralia.—These Orchids are rooting and growing freely, and require copious supplies of

supplies of water at the roots. The foliage frequently becomes covered with a black, sooty deposit, and, now that the syringe cannot be used freely, it may be necessary to keep the plants clean by sponging. Camellias are not so popular as they used to be, but in recent years many fine, single varieties have been raised, with the result that Camellias seem to be increasing in popularity. Although of little use for furnishing out blooms, there are few better subjects for permanently furnishing beds in large conservatories.

Oranges.—These plants are very subject to attacks of mealy bug and scale insects; during the summer the former pest may be kept in check by vigorous syringings. Scale insects are not so easily destroyed, but much may be done towards keeping the plants clean by spraying them frequently with nearly boiling water. An emulsion of paraffin and soft soap is an excellent specific for scale; in syringing the plants with this insecticide, place them on their side, to prevent the liquid soaking into the soil in the pots. If the Camellias are planted out in beds, old sacking should be spread underneath them to catch the liquid that drips from the foliage. Use a syringe with a fine spray, as its use results in a saving of material and minimises the danger of the spray fluid running into the soil.

planted with due regard to aspect and the kind of shrub growing in proximity. If space permits, hardy Ferns and *Hemerocallis* (Day Lily) associate well; whilst *Cynierum* (Pampas Grass) stands out in relief from a wide encircling mass of broad-leaved *Saxifraga*. *Berberis Wilsonae* will gracefully overhang a closely planted bed of common Thyme, and bold groups of *Fuchsia corallina* make striking contrast against *Cupressus macrocarpa lutea*. Interesting relief is obtained by employing dwarf flowering plants beneath trees giving light shade; for this purpose, *Asperula odorata* and *Saxifraga umbrosa* (London Pride) should be included. *Polygonum baldschuanicum* makes a pretty picture growing through an evergreen tree, and also on old stumps, although the latter are probably best reserved for Clematis and Honeysuckle. The natural form of specimen Conifers growing on the extreme margin should be carefully preserved, and encroachment by other subjects prevented.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Nodde, Codicote, Welwyn, Hertfordshire.

Scale Insects on Fruit Trees.—Fruit trees on walls that have become infested with scale insects should be cleansed of the pests before the work of tying or nailing the young shoots is proceeded with. If they are allowed to remain the trees will soon become unhealthy, and, moreover, the fruit will be liable to attack. Mussel scale on Apples, and white scale on Pears, may be destroyed by spraying with caustic alkali, which may be obtained from the horticultural sundriesmen. In bad cases, it will be advisable to loosen the ties to permit of cleaning the shoots thoroughly, and, if time permits, the bark should be scrubbed with a mixture of soft soap and petroleum a day or so after the trees have been sprayed with the alkali wash. The soap and petroleum mixture is made by adding three pounds of soft soap and two pints of petroleum to fifty gallons of hot water. This specific should be kept well stirred when it is being used.

Nailing or Tying.—It is most desirable to undertake the nailing and tying of shoots of most fruit trees before the winter is far advanced, therefore, opportunity should be taken of all fine days to get this work well in hand. Apart from the greater comfort to the operator, the work is done in much less time in genial weather. As the work of nailing proceeds, remove any ties that have become tight through the swelling of the bark, also all nails that are likely to cause injury to the bark. On wet, cold soils, it is advisable to place a board or plank on the border to prevent the surface from being trodden hard.

Basic Slag.—This fertiliser is excellent for fruit trees and especially those growing in heavy soils. Basic slag is a cheap source of phosphate. It is slow in action, and should be applied during the next few weeks, at the rate of six ozs. to the square yard. For orchard trees it may be spread evenly over the entire surface, but for individual bush trees it is best spread over the area of the roots generally, so far as the branches extend.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pruning.—If Peach and Nectarine trees were well disbudded in the spring, carefully pinched, and all superfluous shoots removed immediately after the crop was gathered, they will require little or no pruning now, with the exception of shortening shoots to triple buds, whilst others may require hard pruning to ensure the development of young growths for another year. The leaders, too, in the case of pyramids may require shortening, which should always be to where there are triple buds, but weak side shoots, with only two wood buds, one at the point the other at the base, should be left intact until the crop is set and the young growths pushing freely. Those who lack confidence will act wisely in deferring pruning



FIG. 115.—LARGE BUR ON A WEEPING ASH (see p. 251).

water. If the plants have filled their pots with roots, occasional applications of weak liquid manure from the farmyard will be beneficial. When the young growths are well advanced, cut out the shoots that produced flowers this summer, severing them at the base. This will allow the sunlight and air to reach the new growths freely. If needed, the young shoots may be tied out, to give each ample room for development. Grow the plants in a light position in the *Cattleya* house or intermediate house. Plants that have become root-bound should be transferred to a receptacle two sizes larger, filled with a rooting medium consisting chiefly of good, fibrous loam and crushed crocks.

PLANTS UNDER GLASS.

By JOHN COOTIS, Foreman, Royal Botanic Gardens, Kew.

Camellia.—Where the flower buds have set very freely, they should be thinned, for, when too many remain, the majority of them usually drop off. Another fertile source of bud-dropping is drought at the roots; care should therefore be taken to see that large specimens, whether planted out or in pots, have ample

THE FLOWER GARDEN.

By SIDNEY LEOG, Gardener to the Dowager Lady
NUNBURNHOLME, Warter Priory, Yorkshire.

Tamarix.—The different species of this hardy shrub are worthy of extended cultivation. Light, sandy soil insures their success almost anywhere. Grouped in the vicinity of streams and in wind-swept places they are very effective. Planting may be done now, and the stems cut down to within six inches of their base the first season. *Tamarix tetrandia*, *T. gallica*, and *T. hispida aestivalis* will provide a succession of bloom, the last-mentioned being the finest.

The Shrubbery Border.—The general kinds of bedding and hardy herbaceous plants are not, collectively, suitable for fringing natural shrubberies, and over-planting is detrimental to the desire to attain fine results. First give consideration to such subjects as *Acanthus*, *Hemerocallis*, hardy Ferns, *Saxifraga*, *Hypericum*, *Iberis*, *Polygonatum officinale* (Solomon's Seal), *Aster*, *Foxglove*, *Cynierum*, *Fuchsia*, *Lavender*, and varieties of *Clematis*, *Honeysuckle* and *Hedera*; these to a great extent, struggle for supremacy with the roots of shrubs and Conifers. Simple groups of one species are desirable, and should be

until there can be no question as to the position of the wood buds, as a growth bud should always be left at the point of each shoot.

Later Trees.—If potting has been neglected, it is not too late to complete arrears of this work, although earlier potting allows the roots more time to become re-established in the fresh compost. Maiden trees may also be lifted, potted, and afterwards plunged in open borders; the best place at this late season is the lightest and most airy part of the orchard house. Figs should be stored where they can be kept dry and safe from frost; in fact, all pot trees are best kept indoors after this date.

Pot Strawberries.—Storing the plants for winter constitutes the most important work amongst pot Strawberries just now. Although the crowns have ripened well, some growers may feel inclined to delay the operation of plunging the pots until this fine autumn weather gives way to decided winter. This work, nevertheless, must be done, and provided the open block system in temporary pits is adopted, the pots may be plunged now and the plants still have full exposure to the weather. Single boards, placed on edge back and front to hold the plunging material, with short stakes driven in to keep them in position, will hold the plunging material in position. The stakes should be a foot or so above the boards to serve a second purpose, as the laths for carrying the protecting cover may be nailed to them when severe weather sets in. If the winter proves very wet, the plants will take no harm, but when the pots are piled up on their sides, some of the soil in due course becomes dry and sinks away from the sides, with the result that many of the roots get dried up and perish. Pot Strawberries, like pot Peaches, should never be allowed to suffer for want of water.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Seakale Crowns which were potted and exposed to the recent frosts may be placed in the Mushroom house. The foliage of plants in the open beds has died completely, and a good supply of crowns should be lifted. After trimming off the small roots or thongs, plunge them in ashes in an open situation, leaving the tops of the crowns exposed. The supply to provide for successional forcing batches may be drawn from these as required. From the side thongs prepare sufficient sets to make the new beds required in the spring. Select straight pieces about six inches in length, making the cut across the top level, and at the base in a slanting direction that top and bottom may easily be determined. Tie them in bundles of twenty-five and plunge in ashes as advised for the crowns, until required.

Horse Radish.—To obtain the best results with Horse Radish the roots should be replanted each year, and provided the ground is in a suitable condition the work should be undertaken forthwith. Where Horse Radish is grown on raised beds, lift the whole crop, selecting all roots fit for use, for storing in ashes in an open position. Sets for replanting should be also selected at the same time; these should be prepared from straight pieces of roots nine to twelve inches long. In making new beds mark out a space three feet six inches wide, and, after digging and manuring the land, throw the soil from the sides to form beds nine inches above the ground level. At one foot apart all around the bed, place the sets with the crown end flush with the edge and the roots pointing towards the centre, covering them with four inches of soil. In addition one or two rows may be grown above on the same bed, in which case allow a space of nine inches between each tier. If preferred to grow this crop on the flat, the ground should be double-dug and a liberal amount of decayed manure incorporated in the bottom spit. Plant by inserting the set in a hole made with a dibber—the crown to be two inches under the surface, using fine soil to fill around it. By this method the roots usually reach a suitable size for use in two years.

TREES AND SHRUBS.

SMILAX MEGALANTHA.

SPECIMENS collected by Mr. A. E. Pratt in Szechuen, the Rev. Ernest Faber on Mt. Omei, and Prof. Augustine Henry in Yunnan, gave us some indication of the character of this distinct Smilax. For its introduction to our gardens we are indebted to Mr. E. H. Wilson, who describes it as a common climber in thickets up to 2,000 metres in Western Hupeh and Western Szechuen. The illustration (Fig 116) was prepared from part of a plant raised at Kew from seeds collected by Mr. Wilson (No. 661) in 1908.

Smilax megalantha is a robust evergreen climber, sending up shoots annually from the base 15 to 20 feet in length, readily growing over bushes or fastening on to trees with its tendrils. The stems, as seen in the illustration,

ones on the Beech. I do not recollect seeing anything similar to the huge bur which grows from the roots of a weeping Ash in the gardens of Mrs. Spence, East Acton House, East Acton, Middlesex. Mr. H. Knightley, the gardener, informs me that twenty years ago the bur was only the size of a bushel basket, but is now enlarging rapidly. A root had been barked in two places, possibly by the mowing machine, and the wounds are still evident about the centre of the bur. Around the middle the bur measures 7 ft. 9 in., and from the tree trunk to the grass 4 ft. 11 in. Now the bur is increasing in thickness, and all around the margins, so that it clasps the trunk of the tree, is spreading at the sides, covering up all the exposed roots, and digging its way into the ground in front of it, elevating the grass of the lawn. The tree itself is perfectly healthy, about 45 ft. to 50 ft. high, and still



FIG. 116.—*SMILAX MEGALANTHA*; SHOWING LEAVES, TENDRILS AND SPINES (much reduced).

are abundantly armed with large thorns or spines. The leaves vary very considerably in size, the largest being 7 inches long and 5½ inches wide, leathery in texture, dark green above, glaucous beneath. The flowers of this species are described as greenish and the fruits as coral red. Among the hardy Smilaxes this is undoubtedly the most distinct and ornamental, being quite sub-tropical in character with its luxuriant growth and leafage. A. O.

LARGE BUR ON A WEEPING ASH.

CURIOUS burs are of frequent occurrence upon the English and other Elus, as well as burs of more evident origin on Limes, and small

increasing in height and width by an annual increment of branches. These latter, by excluding the light, cause the older branches beneath to die gradually. The trunk has a girth of 8 ft at a height of 5 ft., and the tree is supposed to have been planted in 1817 when the house was built. The front of the house is covered with a large Wistaria, one of the earliest introduced. Not far from the Ash is a very neat standard of Hawthorn, which originated as a self-sown seedling on the centre of a large tree stump, a Conifer. The roots of this Hawthorn would appear to have found their way to the soil beneath, for the tree stands firmly. J. F.

EDITORIAL NOTICE.

Letters for publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

AUTUMN CLIMBING ROSES.

CLIMBING Roses play so large a part in the modern garden that some notes on varieties that were in flower on the last day of October may be worth recording.

Of those belonging to the Wichuraiana race the most showy was Christine Wright, a rather large-flowered, moderately well formed pink Rose, and a vigorous grower. It was brought out so long ago as 1903; for several years the stock was held in America, but it is now obtainable in this country. The ground plants are flowering almost as freely as in the summer, and a standard has flowers, but not so many as the dwarf plants. Another pink Wichuraiana with a regular autumn blossoming period, which has done well this year is Gerbe Rose. It is a variety I am particularly fond of, and it has a sweet fragrance.

Purity, a large-flowered white sort, always flowers well in autumn. It has a particularly beautiful flower, and it is rather extraordinary that it is omitted from the N.R.S. "select list." Like King Gama, "I can't think why," for there is nothing like it in its class. As with Christine Wright, my ground plants flower more freely than standards, but this may be because the latter, doubtless through some neglect on my part, suffered from an attack of black spot this summer and have had to form fresh leaves. With nearly all Roses this is fatal to autumnal flowering. François Foucard, yellowish white, one of the Gardenia type, is practically a perpetual flowerer, and had a good many blooms out on October 31. Unfortunately it is not so good a grower, nor are its flowers so well shaped as those of either Albéric Barbier or Gardenia.

Albéric Barbier usually produces a number of adventitious flowers in the autumn, but such as have opened are over now. I have none out at the time of writing. Leuchstern, pink, with white centre, had quite a number of flowers. Dorothy Perkins, however, which usually flowers again has, notwithstanding the wonderfully fine October, produced rather fewer blossoms than usual. Paul's Scarlet Climber has flowered well, and a few blooms are still left, and some are yet to come, but not many.

Of the Noisettes, Mme. Alfred Carrière blush white, has been, and still is, particularly good this year. It, like the Rose next mentioned, is, on account of its very vigorous growth, better on wall or fence than trained as a pillar, where correct pruning is more difficult. Rêve d'Or, yellow, is, as usual, well in flower this autumn. Its magnificent growth and foliage make this Rose deservedly popular, its chief fault being that the flowers are not well shaped.

Alister Stella Gray is another good autumnal flowerer, and still quite showy in the garden. The flowers are smaller than those of the two last named Roses, but quite pretty; they are yellowish white with a deeper centre. William Allen Richardson, with small orange blossoms, flowers abundantly in autumn, and has no rival as yet among climbers of this colour.

The Bourbon Zéphirine Drouhin has been delightful all the summer, and is so still. It retains its bright pink colour, shape, and fragrance well, notwithstanding the cold nights, and

its continuity in flowering is wonderful. A paler sport of this charming Rose, called Kathleen Harrop, was brought out recently, but no new member of this family has appeared.

Mermaid, a large single cream flower, has a distinct autumnal flowering, and its beautiful foliage makes it an acquisition. It has still a number of flowers to open, but it is not quite so free as it should be for a first-class garden Rose.

Of the Hybrid Teas, Lady Waterlow has been excellent all this year, and still has some bunches of flowers to open at the end of the long shoots. The colour of the flowers is a lovely shade of pink, and the buds are particularly attractive. Climbing Papa Gontier has also given me many flowers, though they are coming to an end. It is one of the most decorative of garden Roses, and a great advance on the dwarf form. Climbing Madame Abel Chatenay still carries a few flowers, but Climbing Mélanie Souper is of little value in the autumn. Its summer flowers are magnificent, but the colour is not fast enough for the autumn, nor are there many blossoms. François Crousse is still bright and cheerful. It is one of the few crimson climbers, and though doubtless not of the first-class, lacking something in form and fragrance, it must do till we get a better.

Mr. Pemberton's Moonlight, is still flowering freely, and is excellent to pick and allow to open indoors. It is perhaps only a semi-climber, but makes long shoots, and is best when these are allowed to remain and not pruned too hard. It will make a good hedge. Finally, Hildenbrandseck, a rugosa hybrid, which has been in flower all summer, has still a large number of flowers. Of all the rugosas I have tried as pillars, this is the only one I have retained in this form. It has, however, the disadvantage of not setting berries.

Before concluding these notes on autumn flowering climbers, I will refer to four strong growing Roses that have been good this autumn. They are, perhaps, best grown pegged down, but may also be grown as cutbacks in beds in the ordinary way, or will look well on an 8 ft. pillar or trellis. They are all crimsons, a colour which is specially useful in autumn as the colour does not wash out as does that of many yellow Roses, while at this time of the year the sun is not strong enough to bring any of that blue tint into the flowers, which is so objectionable in a hot summer. The four I select are Avoca, Hugh Dickson, J. B. Clark, and Florence Haswell Veitch.

Avoca is the best shaped variety of the four. The flowers are long and pointed, often exceedingly beautiful, while the colour is a good bright crimson, and when the long shoots are pegged down or left long and trained, the flowers are very freely produced. As a cutback I have not found it so free, and in this respect it must yield to the next variety. Hugh Dickson is an old favourite, and its fine constitution makes it worthy of its popularity. Mr. Mawley used to say "It is a Rose to be proud of." It has fine colour, and the flowers are freely produced however it be grown. In shape they are more rounded than Avoca, and the form not so refined, but they have a fine perfume and look well in the autumn garden. J. B. Clark is the strongest grower of this set, but neither perfume nor form is so good as in the last named, and the flowers are apt to come rather rough. Florence Haswell Veitch has a good colour, but the flower is rather thinner than the others of this set. It is, however, readily adaptable for pillar, bed or trellis. *White Rose.*

PALMS OF THE RIVIERA.

THE greatest authority on Palms was the late Professor Odoardo Beccari, of Florence, an Italian botanist to whom we owe the most exact and detailed description of Palms. Few plant families had a more confused nomenclature, and Professor Beccari has contributed more than any other botanist to reducing the nomenclature to order and, of course, much revision has been necessary. Professor Beccari had the kindness to send me those of his works treating of genera or species of Palms cultivated on the Riviera, or which might be tried here with some chance of success.

Among the works he sent me is fascicle V. of the third volume of *Malesia*, containing descriptions of the genera *Pritchardia* (of which probably few will prove able to exist here) and *Phoenix*, of which all species hitherto tried have proved suitable to the climate of the Riviera.

In his revision of the genus *Phoenix*, Professor Beccari retains only ten as distinct species, but he has since changed his view concerning *Phoenix Roebelenii* O'Brien, which he now considers to be a distinct species, although in the publication cited he considered it as a variety of *Phoenix × humilis* Royle.

I have received from all kinds of sources plants and seeds of *Phoenix* under some thirty different names. Several have proved to be identical, and it seems that probably only some fifteen or twenty will prove to be distinct.

I have not been able to obtain sure information about the origin of these *Phoenix*, but except two or three lots of seeds received from different parts of Africa, I have reason to believe that all the others were seeds or seedlings from cultivated plants, and since all the *Phoenix* are dioecious, there can be no guarantee against hybridisation when several species are cultivated in proximity. In compiling his revision of the genus *Phoenix*, Professor Beccari had to consider mainly herbarium material, which was often very incomplete, in some cases consisting only of seeds, and the seeds of the different species of *Phoenix* offer in several cases little difference. Mr. E. Blatter, in *The Palms of British India and Ceylon*, states: "There is scarcely a better way of conveying correct notions regarding the habits of Palms than by means of photographic illustrations. Even the most elaborate description and detailed analysis will never, in that respect, come up to a tolerably good photograph." Again, on page 379, he says about *Phoenix*: "The classification and distribution (of the African species) is still subject to discussion in spite of the investigations of Schweinfurth, Beccari, Engler and Drude."

Anyone, who has observed the many *Phoenix* cultivated in Riviera gardens under different names will subscribe to this last remark of Mr. Blatter; my friends, the late B. Chabaud in his book, *Les Palmiers de la Côte d'Azur*, and Professor J. Rostk, in *Le Palme cultivée et prouvée in Piana aria nei Giardini d'Italia*, insist also on this fact. Under these circumstances, the reader will understand that I prefer, in mentioning the other species of *Phoenix*, not to insist on their identity, which I could not guarantee. It would, of course, be of interest to bring together and plant in proximity, for comparison, as many *Phoenix* species as possible, and I would ask readers who should have occasion to gather ripe seeds of wild plants to kindly send me such, for which I will send other seeds in exchange.

Phoenix sylvestris is a tall-growing, very hardy species, somewhat intermediary in appearance between *P. dactylifera* and *P. canariensis*, and, like the last, never producing suckers. The trunk is about the thickness of that of *P. dactylifera*, but the crown of very gracefully arching leaves is more furnished, though never containing such an enormous number of leaves as in *P. canariensis*.

The other species of *Phoenix* are smaller, though some, as in the case of *Phoenix reclinata*, attain a height of some six or eight metres. This species, which produces suckers

in great numbers, is a very elegant Palm and not nearly so extensively planted in gardens as its merits deserve. Gardeners usually cut away all the suckers, but this treatment greatly reduces the ornamental value of the plant, but even then the very slender trunk, with its crown of gracefully arching leaves, numbering from twenty to thirty, is of great beauty, especially in small gardens in the centre of a group of flowers on which the somewhat open crown does not throw too much shade.

But a much more ornamental effect is produced when some of the suckers are left to develop to form with the main trunk a most beautiful group of stems, bending gracefully in different directions and forming a kind of loose bouquet of great dimensions. Such a group is, indeed, most elegant either on a lawn or in the centre of a group of flowering plants.

When the suckers are not cut off, this species continues spreading, as new suckers are formed on the older ones and a whole thicket is formed, from which only very slowly and

budding, for the reason we then get the true colour and natural form of the individual variety.

Some may consider this method of cultivation productive of coarse, irregular flowers, but that defect does not follow if the disbudbing is not too severe. Stout plants will develop six and eight perfect blossoms, having the true colour and form of the variety.

The following are desirable sorts for an effective display of high-class specimens:—Bronze Molly, a pretty shade of orange-buff and pink shading; Mrs. W. J. Godfrey, a large exhibition flower of a striking Peach-pink colour; Molly Godfrey, rose-pink colour, a fine bloom; Sweet Auburn, an enchanting colour, the orange ground being overlaid with chestnut or fawn; Supreme, the brightest of crimson varieties; Phyllis Cooper, deep golden, almost orange-yellow, an attractive variety; Aristocrat, a rich golden-yellow, providing handsome blooms; Mrs. W. Smith, a large, creamy-white bloom; Gem, a shapely pure white variety; Hermes, a shapely bronze coloured flower; Bertha Fairs, bronze, overlaid with terra cotta;

cutting in midwinter, placing them under a hand-light in a cool house; the resulting plants were ready to plant out during spring, and made large specimens the same season.

Planting may be done during autumn or early spring; on cold heavy soils spring planting is probably best. For autumn planting propagation should take place in July or early August, while for spring planting I find that cuttings dibbled into cold frames during September give perfect results the following season. They root in a few weeks, and when they have made sufficient growth they should be stopped at the sixth pair of leaves to induce them to break from the base and become bushy. For bedding purposes it is not necessary to pot them as they transplant readily from the frames, and grow freely in ordinary garden soil. Need less to say, they do best in open positions, such as suit border Carnations, and like most members of the *Dianthus* family they enjoy lime in some form in the soil; for this purpose basic slag should prove excellent, or old mortar rubble in heavy soils. Planted nine inches or so apart



FIG. 117.—BED OF DIANTHUS ALLWOODII AT KEW.

gradually some stems gain the necessary vigour to form trunks. Left thus to grow at will, *Phoenix reclinata* is also very ornamental, though perhaps less so than when only a few suckers are allowed to remain to form a graceful group of tall stems. *A. Robertson Proschowsky, Jardin d'Acclimatation, Les Tropiques, Nice, France.*

FLORISTS' FLOWERS.

SINGLE-FLOWERING CHRYSANTHEMUMS.

THE autumn shows demonstrate the great popularity of single-flowered Chrysanthemums, whether as plants in a group, as cut blooms arranged in bunches for dinner-table decorations, specimen blooms, arranged triangles of three, or in groups of six with their own foliage. Modern varieties have a wide range of colour, and the form and general appearance of the blooms are very pleasing.

Although many may not agree with me, I prefer the large blooms, as produced by dis-

Mensa, still one of the most charming of white varieties; Sylvia Slade, lake with white centre; Edith Pagram, one of the best of the pink varieties; Mrs. Loo Thomson, a primrose sport from Mensa; Glorious, a deep yellow sport from Mrs. Loo Thomson; Mrs. H. Hogben, a mixture of orange-bronze; Barbara, bright red, said to be an improved Ceddie Mason; Buff Queen, a large exhibition flower, coloured buff, shaded pink; Lizzie Robertson, bright yellow. *E. M.*

DIANTHUS ALLWOODII.

THIS new race of hardy garden Pinks, introduced by Messrs. Allwood Bros., Haywards Heath, is the result of some nine years' work in crossing the hardy garden Pinks with perpetual-flowering Carnations. Judging from their behaviour, they promise to be of immense importance not only out of doors, but for pot culture as well. For both purposes they are free growing, flower in great profusion, while not the least of their charms is their delicious fragrance. They are perfectly hardy, and are easily propagated at any time by means of cuttings. I have rooted them readily from

they grow quickly, and soon cover the ground; grown in the mass they are more or less self-supporting and require very little support from stakes. They flower on long stems, and cutting the blooms induces them to throw up new flowering growth.

These perpetual Pinks are fine for pot culture, but that is another story. There are now about twelve varieties on the market, and the later sorts are a great improvement on the earlier varieties. As represented by Robert and Phyllis the colouring is rather crude. Harold is a perfect white sort, while Rufus is a good light red maroon, and Susan a pale lilac with a dark disc at the base of the petals. This last variety is distinct in growth from the others, having shorter and much stouter shoots; it also excels all the other in the fine, glaucous colour of its foliage which looks like a mass of burnished silver; Susan is therefore worth planting as an edging for its foliage effect alone. There seems no reason why the range of colours should not be increased, but it is to be hoped the raisers will not get the flowers too large; and that fragrance—one of their great charms—may not be lost. *J. Coult, Kew.*

SHOT-HOLE DISEASE OF ANTIRRHINUM MAJUS.

SINCE the publication of my article on shot-hole disease of *Antirrhinum majus* in the *Gardeners' Chronicle* of September 25, 1920, in which I stated that I knew of no record of the investigation of the fungus having been published, a paper by Miss Wakefield, of the Royal Herbarium, Kew, on "New and Rare Fungi," has been brought to my notice (*Kew Bulletin*, 1918).

In this paper, a short description of the morphological characteristics of a *Cercospora* on cultivated *Antirrhinum* is given, which causes spots on the leaves, stems, etc. This *Cercospora*, identified by Miss Wakefield as *Cercospora antirrhini*, appears to be identical with the species of *Cercospora* described in my article, except for a slight difference in the dimensions of the spores. This difference may be due to the condition or age of the spores at the time of measurement, and I have no hesitation in saying that I believe the fungus described in my article to be *Cercospora antirrhini* as named by Miss Wakefield.

Another fungus, *Phyllosticta antirrhini*, causing blackish spots on stem leaves and collar of *Antirrhinum* has been described in America by E. F. Grove and P. J. Anderson (*Phytopathology*, Vol. IX., No. 8, August, 1919). The symptoms of this disease are very similar to those due to *Cercospora*. Black spots and lesions occur on the stem, leaves, etc., and, if the lesions girdle the stem or collar, the parts of the plant above the lesions wilt and die back.

The two fungi are, however, absolutely distinct from one another. In *Phyllosticta* the spores are formed in definite minute dark receptacles or pycnidia. The ostium or mouth of the pycnidium emerges through the epidermis, and under moist conditions unicellular oval spores are liberated as tendrils; whereas in *Cercospora* there is no pycnidium, but the sorus from which the 2-3 septate elongated conidia are abstracted bursts through the epidermis and the conidia are formed on the surface of the sorus after the epidermis has been ruptured.

Seen under a hand lens, the black pycnidia of *Phyllosticta* appear as minute black dots, and the tufts of conidia of *Cercospora* as whitish dots. D. M. Copley, John Innes Horticultural Institution.

NOTES FROM IRELAND.

THE Royal Horticultural and Arboricultural Society of Ireland will hold a spring show in the covered yard at the rear of Earl Iveagh's Dublin residence, St. Stephen's Green, on April 13 and 14, 1921.

The rock-garden in St. Stephen's Green is always interesting; rock gardening has become very popular in the green isle. One of the prettiest, if not the largest, rockery in the neighbourhood of the Milesian Metropolis is that formed by the late Judge Bird at Churchtown House, Dundrum. It is an old-world, suntrapped garden, shut in and sheltered all round.

How well the kindly climate of Ireland suits alpine was well exemplified in a plant of *Saxifraga longifolia*, exhibited by Judge Bird at a R.H.S.I. Council meeting a few years since, the single crown bearing a spike 18 inches high and 27 inches in circumference at the base the plant in question being one of fourteen similar specimens comprising a little colony on the rockery at Churchtown House, Dundrum.

October passed in perfect weather, and as these notes are being written, Dahlias still more than hold their own in and around Dublin. In many gardens the tubers are left in the ground year after year, and the plants grow with great vigour and many are now loaded with flowers. However, the mercy is but local, as Mr. Bedford writing from the Bungalow, Leixlip, a dozen miles away, stated that he had all tender things nipped by frost on September 22, a date on which we, here, were looking for it, but it did not arrive. K., Dublin.

ORMSKIRK POTATO SHOW AND CONFERENCE.

THE well-directed enthusiasm of the Ormskirk and District Potato Society and the fame of the trials of Potatoes for immunity to wart disease carried out by the Ministry of Agriculture at Ormskirk have combined to make the annual Ormskirk Potato Show and Conference one of the main events in the year for those interested in the cultivation of Potatoes from any point of view. The show this year was opened on Wednesday, October 27, by Sir Arthur Griffith-Boscawen, Parliamentary Secretary of the Ministry of Agriculture. In his opening address he referred in sympathetic terms to the loss which all those familiar with the meeting in past years felt so keenly, sustained by the death of Mr. John Snell in April last, a loss that was alluded to time and again during the whole of the meeting, and to the establishment of a medal to be competed for at Ormskirk and to other steps taken to keep his memory green. Some growers in S. Lancashire have felt aggrieved that they are precluded from growing such remunerative varieties as King Edward since it is susceptible to wart disease, but Mr. Griffith-Boscawen pointed out the dangers of permitting such a course, and detailed the steps taken to safeguard the interests of growers both in clean and in infected areas, as well as the general public and our export trade. Mr. Rosbotham, the chairman of the Society, followed, and among other speakers were Mr. A. Birch, Mr. Fitzherbert Brockholes, Mr. Anderton and Mr. J. Wood. The general trend of the speeches was in praise of the policy adopted by the Ministry in relation to wart disease, and of the methods adopted in carrying it out, though here and there a dissentient word was heard.

The exhibition which had thus received the blessing of the Ministry of Agriculture was the best ever held in Ormskirk, the number of entries being very large, the quality excellent, and the arrangements for judging and inspecting the exhibits leaving nothing to be desired. Classes were arranged for single dishes, collections, allotment holders, and farmers. The competition among the last was not, perhaps, as keen as might have been expected, but the best exhibits in this class, as in others, were very good indeed.

Trade exhibits were numerous and on the whole very good, but on two or three stands we noticed, and the point was commented upon by one of the judges at the public tea which was arranged on the opening day, that the limits imposed by the schedule had been exceeded. In an exhibition taking place in the heart of a district where none but immune varieties may be grown (with the exception of a few first early varieties), none but immune varieties were to be exhibited and this was in one or two cases overlooked. In other cases several dishes of one variety under different names were included. If it is desired to perpetuate synonyms (a desire which the temper of the Conference on the succeeding day seemed greatly to deprecate) it would be better to use the type name and print the synonym after it. One exhibit in this group, however, calls for very special mention, that of Messrs. DOBBIE AND CO. To show twenty-three baskets of different immune varieties displayed so that all might see them easily, arranged with taste, and every tuber in every basket typical of its variety, clean, well-grown and of perfect quality, is an achievement reflecting the greatest possible credit upon those who arranged it, those who grew the tubers, and those who staged them. It well merited the Silver Cup it gained.

Another exhibit of first importance was that of the MINISTRY OF AGRICULTURE, showing the result of the trials of Potatoes for immunity at the Ministry's trials this season. It is unnecessary to refer to this at length for we understand it will be seen at many exhibitions during the next month or two, and will show in a very graphic way the results of attempts to grow susceptible varieties on soil infected with *Synchytrium endobioticum*.

The public tea already referred to was presided over by Mr. Rosbotham, who welcomed the large number of visitors and induced Messrs. Cuth-

bertson, Poad, Pimlott, and the judges, Messrs. J. Wood and Chittenden, to give some notes of their experiences with Potatoes this year.

The attendance at the show was greater this season than in any previous one and worthy of the excellent exhibition which had been got together. The committee and the secretary (Miss N. Whitehead) are to be congratulated upon the success which attended the meeting in every respect.

The Conference took place in the Church Room on Thursday morning, Sir Lawrence Weaver, K.B.E., being in the chair.

Dr. Solaman gave an account of his breeding experiments with Potatoes, referring in detail to cases in which flower, colour, etc., is correlated with other characters, and especially to the investigations which have led him to believe that cropping capacity is a heritable character. If further investigation should prove that this belief is well-grounded it will be of the utmost value to the Potato-breeder. His lecture was extremely lucid and well-illustrated, and he pointed out not only the points upon which our knowledge is definite, but also where we still need further light, as, e.g., concerning the heritability of immunity to wart disease. It is to be hoped Dr. Solaman will soon publish a full account of his investigations so that they be available for the careful detailed study they deserve and form the basis of future work.

Mr. Bryan reported upon the trials which he had carried out for the Ministry of Agriculture and detailed the methods by which the assurance of infectivity of the soil of the new trial ground had been secured. He also reported briefly upon the behaviour of the varieties which were under their final trial for immunity and which will soon appear in the official list of immune varieties, including Early Pink, Champion, K. of K., and Katie Glover. U 15, we understand, has been withdrawn, as Mr. McKelvie, its raiser, is not satisfied with its behaviour. Several new varieties, including a number of American origin, have so far proved immune and are to be further tested. Mr. Bryan incidentally remarked upon a stock sent in as "Edzell Blue," which proved to be a coloured form of Northern Star (and, like the white form, susceptible to wart disease), and to the mixtures of varieties in some stocks. Mr. Chittenden, director of Wisley, who read the report of the work of the Potato Synonym Committee (Dr. Solaman, chairman, Messrs. Bone, Chittenden, Lasham, Lesley and McAlister) at Ormskirk, also referred to this subject of mixtures in stocks sent in for trial, sometimes to so great an extent that it was doubtful which was the variety intended. Of the supposed new forms sent for trial for the first time this year, the committee reported many to be quite indistinguishable from others, the behaviour of which towards wart disease had already been tested. Out of 273 forty were like Up to Date (an additional one had all the characters of Up to Date, but a brown skin of the Golden Wonder type), several were the red type of King Edward, which "turns up" in many places every year, others were indistinguishable from British Queen and Abundance, and so on. A noticeable feature of the work done by the committee was the fact that in every case where, after consideration of the characters of the plants, they had been referred to one or other known type, subsequent examination had shown that their behaviour towards wart disease was the same as that of the type to which they had been referred. He also remarked upon the misleading results likely to follow the application of a name already well known for a susceptible variety to an immune variety which was already well named. Mr. Cuthbertson remarked upon the desirability of such work as had been described being undertaken jointly for all three parts of the United Kingdom. There was a tendency towards independent action which he deprecated. Sir Weaver agreed, but said that at present it had not been possible to arrange this with the Scottish Board.

Mr. F. V. Taylor, of the Ministry of Agriculture, then gave an outline of the policy of the Board in its attempts to control wart disease, a policy which has already been outlined in these pages.

THE MARKET FRUIT GARDEN.

OCTOBER was an unusually pleasant month in East Sussex, with clear sky and sunshine day after day. In what is commonly the wettest month of the year only 1.71 in. of rain fell on seven days. People freely spoke of it as the driest October on record, which only shows how short memories are with regard to seasons, for October of last year was even drier with only .63 of rain in six days. Grass land was then too hard to plough, ponds were dried up, and water had to be carted for live stock. This year the month was probably sunnier, but there was a persistent east wind which kept the temperature low, although there was no frost severe enough to cut even the tenderest of plants. Fruit trees held their leaves remarkably well. Young Apples looked almost as green at the end of the month as at midsummer.

PREPARATIONS FOR PLANTING.

The weather has been most favourable for the preparation of land for planting. I have eight acres which will be planted during the winter with Apples and Plums, with Black Currants between them. Part of this land was cropped with Potatoes, which are the best of all crops to precede fruit trees, because, if generously manured, they leave the soil in good condition and fairly free from weeds, whilst they are off in time to allow of thorough cleansing and cultivation. The rest of the land was under Oats, which are much less suitable than Potatoes, because they leave a foul stubble to deal with. However, in such dry weather there has not been much difficulty in cleaning the stubble. It was first skimmed over as shallowly as possible with the plough. Then the weeds were worked out with harrow and spring-tined cultivator, and most of them burnt. Finally the land was ploughed again, but this time deeply. The whole of it was subsoiled last year, so as not to cause delay in planting this autumn.

Maiden trees will be planted, partly for economy, but more still because I aim at making half-standards with stems about 3 ft. high. The half-standards sold by nurserymen nearly always have 4 ft. 6 in. stems, which are unnecessarily high. A 3 ft. stem allows of horse or motor cultivation close to the trees, and yet does not put the head out of reach from steps of convenient size. I would have the stem shorter were it not for the necessity of protecting the trees from rabbits. A loose tube of wire netting, 2 ft. to 3 ft. high, fixed round the stem and its supporting stake, defeats rabbits and hares, and is much cheaper and less troublesome than making a rabbit-proof fence round the outside of the plantation.

The trees will be planted 18 ft. apart each way, with Black Currants 6 ft. apart between them. Originally the trees on this place were planted 12 ft. apart, but it has proved too close, even for bushes. There is nothing lost by giving plenty of space, as the trees then fruit from top to bottom instead of only on the top branches, as they do when planted so close that they ultimately meet between the rows. Moreover, it is essential nowadays, from a labour-saving point of view, to plant so as to allow of horse or motor cultivation so far as possible. An orchard planted as above described may be cultivated in two directions for several years, and afterwards in one direction—that is, between the rows of Currant bushes. When the latter are worn out and removed, implements can again pass between the trees in two directions in many cases.

ORCHARD FILLERS.

Never again will I include what are called orchard fillers (bush-shaped trees on dwarfing stocks) in forming a new plantation. There is always a great temptation to leave them longer than is good for the permanent trees, because it seems such a sacrifice to grub them whilst they are in good bearing condition. Probably the system is satisfactory where the permanent orchard is to be of full standard trees, and the land is so good that they make vigorous growth for many years without fruiting much, so that

the fillers have time for a really useful career before the standards become profitable. Even then I doubt if they are really worn out when they ought to be grubbed. On my rather light soil trees, even on free-growing stocks, come into bearing quickly, so that anything with a longer life than Currant or Gooseberry bushes is out of place as a filler. Black Currants stand for 10 or 11 years, and the trees above them ought to be profitable by that time, unless fruiting is retarded by very severe pruning.

I am reminded of this subject by the necessity for grubbing a lot of fillers in my plantations this winter. Most of them are Plums, which are only now coming into their prime; but they must be sacrificed to give space to the permanent subjects. The only pleasant feature about their removal is that it will give room for horse cultivation and save a good deal of hand work.

THE APPLE CROP.

I have been working out the figures for my Apple crop and comparing them with those of 1919. As was anticipated, the difference in yield is very striking. Royal Jubilee gave only one-tenth of last year's crop, Cox's Orange Pippin and Lane's Prince Albert one-eighth, Allington

ley's Seedling. On the other hand, big decreases are shown by such valuable varieties as Beauty of Bath, Allington, Lane's Prince Albert, and Cox's Orange Pippin. Coarse varieties like Early Julyan, Lord Derby and Domino are dirt cheap in a normal season, but they are worth having in such a lean year as this.

A POLLINATION PROBLEM.

In my last notes (p. 193) I drew attention to the Apple Royal Jubilee, which is supposed to be self-sterile, and yet crops well, in spite of the fact that it blooms long after any other variety commonly grown in commercial orchards. I was much interested to see that Mr. F. J. Chittenden mentioned the same thing in his lecture given in connection with the recent fruit show at Wisbech. He said that he could find only three varieties absolutely self-sterile, one of which (Royal Jubilee) he could not understand, as it was the last of the commercial varieties to bloom.

Whence, therefore, came the pollen to fertilise its blossom? He expected to find on further investigation that Royal Jubilee was more or less self-fertile after all. *Market Grower.*

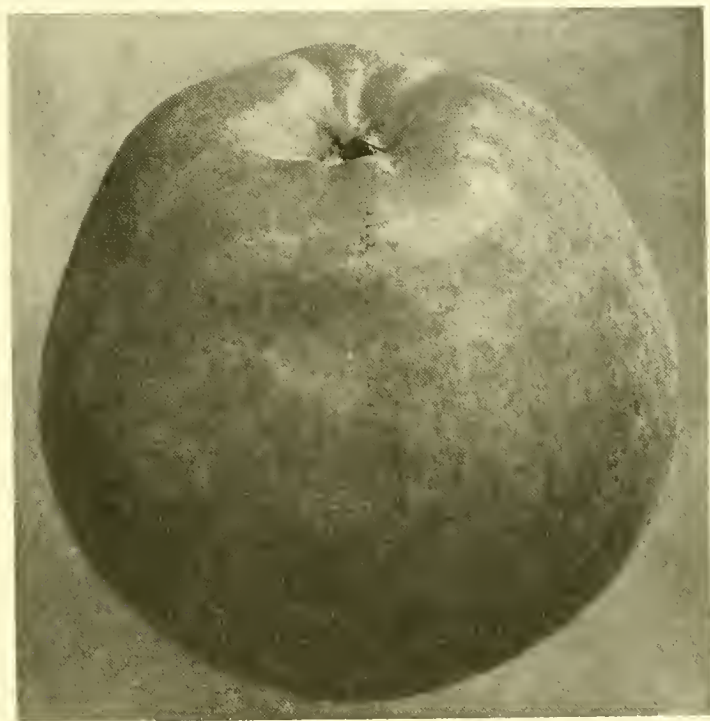


FIG. 118.—APPLE HERRING'S SEEDLING.

FRUIT REGISTER.

APPLE HERRING'S SEEDLING.

and Gladstone one-fifth, Bramley's Seedling, Blenheim Pippin, Charles Ross, Lady Sudeley, Domino, Lord Grosvenor, and Beauty of Bath about a half. Worcester Pearmain yielded only a few bushels short of the previous crop, and would have beaten it if one batch of trees had not suffered severely from both aphid and scab, with the result that the fruit was all small and almost worthless. The only varieties that yielded heavier crops than in 1919 were Queen and Early Julyan, the latter giving more than double.

Owing to the higher prices ruling this year several varieties gave a better return than they did last year, in spite of the lower yield; but in most cases the increase was very slight and is much more than balanced by the loss shown by other varieties. Worcester Pearmain, by far the most profitable variety of the year, is the only one to show a striking increase in return, the figures being more than doubled.

Other varieties of Apples cultivated by me that brought in more than in 1919 are Early Julyan, Lord Grosvenor, Domino, Queen, Lady Sudeley, Lord Derby, Charles Ross, and Bram-

This very handsome Apple (see Fig. 118) received the R.H.S. Award of Merit on October 5 last, when it was shown by Messrs. J. R. Pearson and Sons. The variety was also exhibited in a collection on the same occasion by Messrs. J. Cheal and Sons, and the fruit illustrated was one of Messrs. Cheal's specimens. It will be seen from the illustration that it is an Apple of large size, perhaps rather too large for a dessert variety, but the flavour is excellent; the skin is almost wholly covered with deep red, that on the shaded side being a little paler. The eye is set in a moderately deep basin, and the segments are almost closed. The stalk is very short and set in a deep cavity. The flesh is white. We saw the tree in Messrs. Cheal and Sons' nursery this autumn just after the fruits had been gathered. It is an upright grower, of good habit generally, and the branches were well set with fruit buds for next season.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Heavy Crop of Potatoes.—Having read in the *Birmingham Post* of October 18 of the marvellous weight of 876 lb. of Potatoes grown from 1 lb. of seed, I suggest such a crop must be a record one. I have seen some very heavy crops of various Potatoes in my four years' experience, but nothing to equal this weight. Perhaps some of your readers may be able to give particulars of similar heavy cropping. *A. M. Sherborne.*

Cost of Potato Lifting.—I am glad you draw attention to the advantage of using a digger to lift Potatoes as compared to the use of the fork. With the use of a digger three acres per day may easily be lifted, although the tubers are not taken quite as clear from the soil as when raised by the fork. The saving in time and cost is an important point to study in these days of expensive labour. I find when the rows are extra well earthed up there is less loss from injury to the tubers by the action of the share. *E. M.*

The Glory Pea.—I notice in your issue for October 30 (p. 222) a correspondent is asking for particulars about the Glory Pea of New Zealand, commonly known as *Clianthus Dampieri*. In recent years this plant has been grown under the name of *Sutherlandia frutescens*, and some ten years ago was one of the features of the bedding display at Finsbury Park. I have a bed of this plant every year. It is particularly striking and graceful, and if mixed with *Pelargonium* Flower of Spring for foliage only, gives a beautiful effect. *Sutherlandia frutescens* should be raised from fresh seed every year, in heat, during the second week in December, and when the seedlings show their second leaf they should be potted on singly and placed on a shelf close to the roof-glass for a month. Syringe then, freely to check red spider, which is a persistent pest. Transfer the plants to pots of a larger size and harden them off in a frost-proof frame. Pinch out the centre shoot when they start to run and by the end of May the plants will be fine specimens for bedding out. I may say that I have used *Sutherlandia frutescens* as a standard. *H. J. Selborne Boome, Wild Oak, Hatfield.*

[In the *Index Kewensis* *Clianthus Dampieri*, A. Cunn., has no generic or specific synonym, though R. Brown's *C. Dampieri* is referred to C. Oxleyi. We shall be glad if our correspondent will give us his authority for referring *C. Dampieri* to *Sutherlandia frutescens*.—Eds.]

Eucalyptus Gunnii (see p. 203).—I was interested in Mr. Shaw's remarks on this plant, and am sending details of a specimen growing in these gardens on the top of a fairly high bank, bordering the rock garden. The girth of the tree at the base is 6 ft. 3 in. and a few feet from the ground breaks out into three main branches. These three shoots are practically the same height, which, at a recent measurement, was found to be 56 ft. The girth of the branches at the junction is 3 ft. 7 in., 3 ft. 4 in. and 3 ft. 2 in. respectively. The tree is now a mass of flowers and seed pods. I do not know the year the tree was planted, but it was raised from seed sown in 1906. *T. Larkbey, Mostyn Hall Gardens, Flintshire.*

National Union of Horticultural Workers.—With reference to the paragraph on p. 223 of the *Gard. Chron.*, November 6, the local Press in reporting a recent visit and meeting addressed by Mr. Harding, in the Lea Valley district, states that he gave a very strong hint to his hearers that if any difficulties occurred with employers it was open to them to throw half-bricks through the greenhouses. I do not know whether this is one of the "conciliatory" methods mentioned in his letter to you, but think it worth while drawing your attention to the matter so that you may see that there are two sides to this gentleman's remarks, one apparently turned to the general public, and the other to the workers to whom he appeals. *Chas. E. Pearson, Loundham, Notts.*

SOCIETIES.

NATIONALE D'HORTICULTURE DE FRANCE.

THE French National Horticultural Society has just held (27th October to 5th November) a large exhibition in the Palm house of the Jardin d'Acclimatation in the Bois de Boulogne. Chrysanthemums were the chief exhibits, but collections of fruit were also numerous and very fine.

The Grand Prize of Honor was awarded to Madame MARTIN, the widow of the famous French grower, for her collection of Chrysanthemums and unnamed novelties; the second prize to Messrs. NOMBLOT-BRUNEAU, for trained fruit trees and a fine collection of fruits.

Among the principal exhibitors must be mentioned Messrs. VILMORIN-ANDRIEU AND Co., who exhibited groups not for competition. Their collection was by far the best, comprising strong-growing specimens of Chrysanthemums trained in pyramid and cone shape. Other exhibits were well worthy of mention, among them the Chrysanthemums shown by M. GEORGES TRUFFAUT, the single flowered varieties of Messrs. FERARD, and the groups of Messrs. NONIN, LOCHOT, LAVEAU, LEVEQUE, and others.

The Dahlias of Messrs. CAYEUX AND LE CLERC, and of M. MILLET; the Carnations shown by Messrs. LEVEQUE AND SON; those of Messrs. VACHEROT AND LECOUPLE (of the "Colossus" strain, among which was a very fine new variety, M. Jeannet, deep purple in colour); the Carnations of M. DEBEAUX, of Lyons, known as American (of clear, bright colours, and with calyces which do not split); and the beautiful Carnation Jeannine Beer, pure white, shown by M. LOCHOT; were also excellent.

Among the exhibits of fruit, a very fine collective group was staged by the ORLEANS RAILWAY Co., representing the products of the various regions served by the line. Excellent collections were also shown by Messrs. NOMBLOT-BRUNEAU, CROUX, MOSEN, etc., and also from the HORTICULTURAL COLLEGE at Igny.

Collections of fruits, for ordinary trade and *de luxe*, were very numerous. The MONTREUIL HORTICULTURAL SOCIETY had a specially fine exhibit of lovely fruit's, comprising Pears Charles Ernest, Doyenne d'Hiver, etc., Apples Calville Blanc and Reinette du Canada, and a new variety of Pear named Arthur Chevreau, a fine, long-shaped fruit of excellent quality. The SYNDICAL CHAMBER OF GROWERS at Thomery showed some very fine Grapes Chasselas de Fontainebleau, and other fruits of superb quality, including a Pear, Passe-Crassane, weighing 980 grammes. M. GERMAIN, the well-known actor of the Palais Royal Theatre, showed, by the excellence of the fruits he had grown himself, that besides being famous in his own profession, he is a skilful cultivator.

We may also mention the fine collections of vegetables shown by MM. VILMORIN-ANDRIEU AND Co., CAYEUX AND LE CLERC, and GEORGES TRUFFAUT. Trained fruit trees were well shown by Messrs. NOMBLOT-BRUNEAU, CROUX, and CARNET, and Conifers by M. MARTIN-LECOINTE.

Many Certificates of Merit were awarded for new Chrysanthemums, Mme. MARTIN alone obtaining fifteen. The following may be mentioned among others of interest:—Mélusine, a variety with large, single flowers, petals pink; and André Cornu, red, with pink reverse (NONIN); Bug Jorgal, brownish red, with a yellow centre (PRIOR); Little Marie Louise, a Japanese variety with pure white flowers (GUILLOISEAU); Cendrillon, another white Japanese form; Rignet à la Houppie, with large lilac head; and Rosine, single-flowered, a fresh pink with pink centre (VILMORIN).

The double-flowered Tuberous Begonias shown by Messrs. VALLERAND also received an award; e.g., Madame Albert Vallerand, pale pink; Bouquet Cerise, bright pink; and Globe Lumineux, bright pink, with recurved petals.

Half a dozen Certificates of Merit were awarded to M. MARTIN, Digoin, for plants of the new strain of single Dahlias known as "Etoile Digoinaise" (Digoin Star).

SCOTTISH HORTICULTURAL.

NOVEMBER 2.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Miss Burton, president, in the chair. A lecture on "Chemistry in Relation to Plant Growth," with experiments, was given by Mr. W. H. T. Williamson, Edinburgh, and East of Scotland College of Agriculture.

A certificate of merit was awarded to a new Apple, St. Vincent, obtained by crossing Wellington with James Grieve, exhibited by Mr. R. STAWARD, Panshanger Gardens, Hertford; and a sport from Chrysanthemum Cranfordia, exhibited by Mr. GEORGE N. SIMPSON, Edinburgh, was Highly Commended.

FRENCH CHRYSANTHEMUMS.

The annual meeting of this society was held on the 28th ult. in the hall of the National Horticultural Society of France. M. Viger occupied the chair, and opened the proceedings, and then handed over the conduct of the meeting to the newly-elected President, M. René Mommeja.

The Secretary, M. Ph. Rivoire, reminded the meeting that their new President had offered a prize of 200 francs for the raiser who sent up to the Floral Committee the largest number of meritorious new seedlings.

Papers were read by several members on the best dates for taking cuttings, stopping and taking the buds. Insect pests of the Chrysanthemums were dealt with, especially a new one, which had made its appearance in Brittany.

It was agreed that the Congress for 1921 should be held at Le Mans. M. Decault, of Blois, was the fortunate recipient of the Congress medal for the year, 1920.

NATIONAL CHRYSANTHEMUM.

The Floral Committee of this society met at Essex Hall on Monday, November 15, when the flowers placed before it were of unusually fine quality. The following awards were made:—

FIRST-CLASS CERTIFICATES.

Teresa.—This is a medium-sized reflexing Japanese variety of deep bronzy Apricot colour; at a little distance and under artificial light the colour is golden bronze. Shown by Mr. KEITH LUXFORD, Sheering, Harlow.

Mrs. John Balmer.—A large Japanese variety, scarcely as deep in form as many modern sorts, but, nevertheless, a promising exhibition sort. The colour is bright Indian red with dull gold reverse. Shown by Mr. KEITH LUXFORD.

Norman Chittenden.—A lovely large Japanese variety with long, reflexing and drooping florets of medium breadth. In addition to good form and large size, this variety has exquisite colour—white faintly tinged with green. Shown by Mr. K. LUXFORD.

Helena Margerison.—Another big exhibition Japanese variety of reflexing form, and with somewhat narrow florets. The colour is pale-pinkish pink. Shown by Mr. K. LUXFORD.

Catrina.—A beautiful, large, single variety of good form and substance; the flowers have about three rows of bluntly pointed florets, and the colour is rich old rose, with a narrow white zone around the yellow eye. Shown by Messrs. CRAGG, HARRISON AND CRAGG, Heston, Hounslow.

The Executive Committee met at 35, Wellington Street, Covent Garden, during the evening, and there was a capital attendance. The chief business of the evening related to the recent exhibition and to the future activities of the society. At the conclusion of the business Mr. Percy A. Cragg gave a short lecture on "Manures with Special Reference to Chrysanthemums." He showed how suitable manures could be compounded, and the way in which they acted upon plants. A point brought out by the lecturer and numerous speakers was that when artificial manures are used as top-dressings, the crop must be watered much more freely than usual to secure the best results. In the absence of such heavy waterings the money expended on artificial manures would be very largely wasted.

ROYAL HORTICULTURAL.

NOVEMBER 16.—The meeting of the society, held at Westminster on this date, was only moderately well attended. Chrysanthemums, Orchids and Heaths provided the greater part of the display. Novelties, excepting new Chrysanthemums, were not numerous.

Floral Committee.

Present.—Messrs. H. B. May (in the chair), Reginald Cory, John Green, G. Reuthe, John Heal, Chas. E. Pearson, Geo. Leak, Wm. Howe, J. F. McLeod, H. J. Jones, C. Dixon, Arthur Turner, F. Page Roberts, Chas. E. Shca, E. F. Hazelton, W. P. Thomson, E. H. Jenkins, George Paul, W. G. Baker, J. T. Bennett, Pöe, J. Jennings, E. A. Bowles, W. R. Dykes, R. W. Wallace, H. Cowley, R. C. Notcutt, Jas. Hudson, and W. R. Cranfield.

AWARDS OF MERIT.

Chrysanthemum Norman Chittenden.—A magnificent white-flowered Japanese variety, shown by Messrs. KEITH LUXFORD AND CO. (see N.C.S. awards, p. 256).

Chrysanthemum Teresa.—A market variety of bronzy-apricot colouring, shown by Messrs. KEITH LUXFORD AND CO. (see N.C.S. awards).

Chrysanthemum Major Chichester.—This rich yellow Japanese variety received the N.C.S. First Class Certificate when shown by Mr. Hall on October 13 last (see page 210). Shown by Mr. H. J. JONES.

Berberis × jerox.—A natural hybrid discovered at Wisley and shown by the Society. In many respects it may be described as being a more erect-growing *B. Wilsonae*. The coral berries are freely produced.

GROUPS.

Mr. PHILIP LAMDS contributed a large collection of splendidly grown Heaths, such as are sold for market. They were chiefly *Erica hyemalis* and its white variety, with *E. melanthra* and *E. gracilis nivalis*. The plants of *E. melanthra*, plentifully furnished with dainty pale coral-pink flowers, were particularly handsome specimens. (Gold Medal.)

Mr. H. J. JONES had a most attractive display of large-flowered Japanese Chrysanthemums, with many singles and market varieties. Of the exhibition sorts the very best were Mrs. Charles Davis, white with greenish centre; Major Chichester, rich golden yellow; Mrs. G. Monro, junr., velvety-crimson; Peace, fawn-shaded apricot; General Petain, pink; Wm. Turner, white, and Mrs. Algernon Davis. Of the many singles, we selected Lizzie Robertson, Mrs. H. J. Jones, Gen. Molly Godfrey, and Phyllis Cooper as being of great value. (Silver-Gilt Flora Medal.)

Messrs. WELLS AND CO. had a superb collection of Chrysanthemums, and on this occasion they were able to obtain sufficient space to display the value of the many varieties to their fullest extent. Along the back row were such large Japanese varieties as Jas. Stredwick, old rose; Mrs. G. Lloyd Wigg, yellow; Edith Cavell, chestnut-bronze, and General Petain, pink on white ground. Other large Japanese sorts of merit were General Smith Dorrien, rosy-red; Percy A. Dove, white, and W. Rigby, yellow. Of the singles we especially admired Miranda, Audrey, Mrs. W. T. Smith and Jumo. (Gold Medal.)

Messrs. KEITH LUXFORD AND CO. had a most attractive exhibit of Chrysanthemums in which the large Japanese and smaller decorative varieties were tastefully blended. Of the former, the new sorts, Mrs. H. E. Dixon, Mrs. John Palmer, Nadine and Teresa, which won distinction at the previous day's meeting of the N.C.S. Floral Committee, were magnificent. A couple of vases of mixed Pompon varieties, several of them new seedlings, in the front row were particularly fascinating, while the singles included Bronze Molly, Lady Astor, M.P., Charibel and Phyllis. (Silver Flora Medal.)

Messrs. GODFREY AND SON brought from the west country a selection of decorative Chrysanthemums of the single-flowered and the small market varieties, and they made a very attractive display. (Silver Banksian Medal.)

Mr. L. R. RUSSELL brought a collection of exceedingly well-grown stove plants. *Codiaeums* (*Crotons*) such as Golden Ring, Reedii and Countess, were highly coloured. *Dracaena incomparabilis*, a hybrid between *D. amabilis* and *D. Margaret Storey* was strikingly beautiful. *Lasiandra macrantha*, by reason of its wonderful blue flowers, compelled much admiration. Silver Flora Medal.)

Messrs. STUART LOW AND CO. again added excellent winter-flowering Begonias to their customary exhibit of greenhouse Carnations. The latter included Sheila Greer, a rose-flaked novelty, Countess of Wilton, a mulberry shade of terra cotta, British Triumph, rich, deep crimson, and their new White Pearl. (Silver Flora Medal.)

Messrs. WM. CUTBUSH AND SONS also had a valuable collection of greenhouse Carnations and staged floriferous plants of *Erica gracilis*, *E. gracilis nivalis*, *E. hyemalis* and well-berried examples of *Skimmia japonica*. (Silver Flora Medal.)

Messrs. ALLWOOD BROS. brought many charming Carnations. The vases of Rose Pink Enchantress, Wivelsfield Claret, Wivelsfield Beauty Salmon Enchantress and Edward Allwood, a vivid, rich scarlet, were all particularly good. (Silver Flora Medal.)

Mr. G. REUTHE showed many interesting shrubs and alpine; the former included the earliest *Rhododendrons*, splendid blooms of *Lapageria rosea*, and the quaintly-marked flowers of *Vaccinium rugosum*. (Silver Banksian Medal.)

Mr. W. WELLS, JUNR., had a small collection of very interesting alpine. (Silver Banksian Medal.)

Messrs. REAMSBOTTOM AND CO. showed good flowers of their St. Bridg Anemones from the open border.

Orchid Committee.

Present.—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Sir Fred. Moore, Messrs. Jas. O'Brien (Hon. Secretary), C. J. Lucas, J. Wilson Potter, R. Brooman-White, R. A. Rolfe, Arthur Dye, Chas. H. Curtis, H. G. Alexander, J. E. Shill, Fred K. Sander, A. McBean, T. Armstrong, E. R. Ashton, and Pantia Ralli.

On the motion of Mr. A. McBEAN, the Committee resolved that in future the number of flowers borne by the plant certificated should be marked on the record of the picture of the flower receiving the award.

Awards.

FIRST-CLASS CERTIFICATE

Odontoglossum St. George, Ralli's variety (eximium × *Alexandrina*), from PANTIA RALLI, Esq., Ashted Park (Orchid grower, Mr. Farnes). A noble flower of perfect shape, with white ground heavily blotched with deep purple, the white ground showing through between the markings very effectively.

AWARDS OF MERIT.

Laelio-Cattleya Momus Bryndir variety (*L.-C. Rubens* × *C. Octave Doin*), from Dr. Miguel Lacroze, Bryndir, Roehampton (Orchid grower, Mr. Taylor). A perfectly-formed flower with large, bright rosy-mauve flower, having white basal mid-ribs and violet-purple lip, with yellow disc and gold lines from the base.

Brasso-Laelio-Cattleya The Baroness, Fasey's variety (*B.-C. Mrs. J. Leeman* × *L.-C. Ophir*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. Seymour). A good second to the fine original in Baron Schröder's collection. The flowers are large, with canary yellow sepals and petals, the lip having dark purple lines from the base, and rose-tinted fringed front.

Odontoglossum Red Admiral (eximium × *Lambadianum*), from W. R. FASEY, Esq. A model white flower tinged with lilac and bearing large claret blotches, the central colouring having remarkable ovate white blotches.

Laelio-Cattleya Fulva (*L.-C. Golden Oriole* × *C. fulvescens*), from Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (Orchid grower, Mr. H. G. Alexander), one of the best of the recent Westonbirt yellow hybrids. Flower large and well-formed, bright chrome yellow, the ample, crimped lip being tinged and veined with rose-

purple, showing *C. fulvescens* in a marked degree.

GROUPS.

Messrs. STUART LOW AND CO. were awarded a Silver Flora Medal for an effective group occupying two sides and the end of the central stage. In the middle were fine specimens of *Oncidium varicosum*, and the body of the group contained good *Cattleyas*, *Laelio-Cattleyas* and *Odontoglossums*.

Messrs. SANDERS were awarded a Silver Banksian Medal for a group of finely-grown *Cypripediums*, *Odontoglossums* and *Odontodas*. Specially noteworthy were a super-dark *Odontoglossum illustrissimum*, a very remarkably blotched *O. amabile*, worthy of a varietal distinction, and the massive *Cypripedium Formidabile*.

Messrs. J. and A. McBEAN, Cooksbridge, received a Silver Banksian Medal for a showy group with *Cymbidiums* in the centre.

OTHER EXHIBITS.

Sir GEO. L. HOLFORD showed *Cypripedium Nydia*, a very compact and nicely-coloured flower.

Sir JEREMIAH COLMAN, Bart., Gatton Park, staged a group of interesting hybrids and rare species. The centre plant was the charming Catton Blue *Cattleya Portia coerulea*, and other pretty forms were *Laelia pumila Margantaria*, blush white with pink lip; the stubborn *Cattleya labiata Peetersii*, with a good spike of its bizarre flowers, *Zygopetalum Balleae*, etc. The gem of the group was *Sophro-Laelio-Cattleya Lettice* (*L.-C. Columbianae* × *S.-L.-C. Helen*).

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed an interesting group of hybrids, including *Odontoglossums*, *Cattleyas* and *Odontodas*. Among their *Odontoglossums* the charming white *O. Promerens xanthotes* and some richly-blotched hybrids were prominent.

Baron BRUNO SCHRÖDER, The Dell Park, Englefield Green, showed several very distinct forms of the handsome *Laelio-Cattleya Schröderae*, all with pure white sepals and petals and variously coloured labellums.

Sir HERBERT S. LEON, Bletchley Park (gr. Mr. W. Field), showed *Cattleya Esther* (*Barbara* × *Maggie Raphael*), a very pretty rose flower, with purple lip; a charming variety of *L.-C. Ettrick*; the new *Cypripedium* Colin Barrow, and other hybrids.

W. R. FASEY, Esq., sent *Odontoglossum Rosina* (eximium × *Lady Pirrie*), a fine, mainly dark purple flower; *Odontoglossum Sandow*, heavily blotched, and *Odontodia Orion Fasey's* var., a large and richly coloured red flower.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood) showed a fine form of *Odontoglossum St. George* (eximium × *Alexandrina*) and other hybrids.

PANTIA RALLI, Esq., sent *Laelio-Cattleya Schröderae* Ashted Park var., a white flower with ruby-purple lip.

Mr. HARRY DIXON, Wandsworth Common, showed *Odontoglossum eximium xanthotes* var. *Venus*, a fine, pure white flower with occasional yellow spots.

Fruit and Vegetable Committee.

Present.—Messrs. C. G. A. Nix (Chairman), Jos. Cheal, Geo. P. Berry, F. Jordan, L. B. Dicks, P. D. Tuckett, J. G. Woodward, Ed. Beckett, W. H. Divers, W. Wilks, G. F. Tinley, and W. Poupart.

A very handsome Apple named Fielder's Ruby was shown by Mr. H. J. FIELDER, Hope Cottage, Sarisbury Green, Southampton. In appearance this variety somewhat resembles Worcester Pearmain, but is broader and the colour is not such a deep red; it is more garnet-red. The stalk is short, thick, and set in a fairly deep cavity; the skin is thick and tough, so that the fruit would be likely to travel well. The season is over, and the Committee expressed a desire to see the variety again next year.

Mr. EDWIN BECKETT showed a very fine ornamental Capsicum named Beacon. A group of fruiting plants was also shown in the hall, and provided a bright touch of colour, with the numerous intense red, almost scarlet, fruits which have a curious formation at the apex that ends abruptly and forms four lobe-like protrusions.

(Silver Banksian Medal.) THE MINISTRY OF AGRICULTURE showed varieties of Potatoes from the immunity trials at Ormskirk. There were the best of the immune sorts divided into their respective types, and several immune seedlings not yet in commerce. Illustrations of wart disease were also shown, and varieties susceptible to this complaint. Amongst the more notable immune varieties were Rhoderic Dhu, a large, round, deep-eyed Potato with a suspicion of purple, that was awarded a Gold Medal at Ormskirk as the best of the newer introductions among immune varieties. There were also excellent samples of Kerr's Pink, which is recommended as a substitute for King Edward, being immune; Golden Wonder, one of the finest edible Potatoes; The Bishop, the tubers of which are of the best shape and appearance for show purposes; Tinwald Perfection, Ally and Arran Comrade.

Messrs. BEES, LTD., were awarded a Silver Knightian Medal for an exhibit of Potatoes, very attractively arranged on a staging covered with purple velvet and relieved with sprays of Smilax. The tubers were excellent specimens, but the greening of the skins showed that they had been exhibited on previous occasions. A selection of the varieties included Kerr's Pink, King George, Witch Hill, King Edward, The Locher, Arran Comrade, Abundance, The Ally and Edzell Blue.

HITCHIN CHRYSANTHEMUM.

NOVEMBER 11.—In bygone years Hitchin was famous for its Roses and rosarians, and also for its capital annual Chrysanthemum Show. The Hertfordshire town does not now occupy such a high position in the Rose world as formerly, and its Chrysanthemum Show has not yet attained to pre-war importance. However, the display held on the above date in the Town Hall, and opened by Mrs. C. Cain, was so much finer than the one held in 1919 that the officers and Committee have good grounds for anticipating exhibitions as large and important as any previously held.

Sixty-seven classes were provided, and the principal open one was for six vases of Japanese blooms, distinct, three blooms of a variety in each case. There were two competitors, and on this occasion the Silver Challenge Cup was awarded to Col. W. M. Pryor, Weston Park, Stevenage (Mr. R. H. Crookford) for fine specimens of Mrs. Rigby, Mrs. J. Gibson (one of these was the best bloom in the show), Queen Mary, Princess Mary, Edith Cavell, and Mrs. G. Drabble. C. A. CAIN Esq., The Node, Welwyn (gardener, Mr. T. Pateman) was a close second. For four Japanese varieties distinct, three blooms of each, in vases, another silver Challenge Cup was offered as first prize; this was won by D. L. JAMES, Esq., The Ilco, Hitchin (gardener, Mr. F. G. Kellaway), who showed His Majesty, Mrs. J. Gibson and Mrs. R. C. Pulling in good form; 2nd, W. N. BURDITT, Esq., Fairfield, Biggleswade (gardener, Mr. G. Seal). For six Japanese blooms, distinct, C. A. Cain, Esq., defeated Col. Pryor, as he also did in the class for five Japanese blooms of one white variety, with Mrs. Luxford; and again in the class for five blooms of one coloured Japanese variety, with Mrs. R. C. Pulling.

F. RANSOM, Esq., Newland, Hitchin (gardener, Mr. W. Robinson), had the best arranged vase of single Chrysanthemums in a class where the competition was keen; Major J. F. HARRISON, King's Walden Bury (gardener Mr. T. J. Hartless), 2nd; the positions of these two competitors were reversed in the class for a vase of decorative Chrysanthemum, and here again, the competition was excellent. Mr. C. H. GREEN was the only exhibitor of a group of Chrysanthemums, and he was awarded first prize for a commendable display.

No fewer than twelve ladies competed in the class for a table decoration of Chrysanthemums, consequently the class provided an excellent display. Mrs. W. G. P. CLARKE, wife of the secretary, won the chief prize, with a dainty design in yellow single and bronze decorative varieties. In many instances the decorations were too heavy. The class for a basket of Chrysanthemums also resulted in a good com-

petition and here Mrs. C. H. GREEN led with an elegant arrangement, followed in order by Mrs. A. H. KING and Mrs. ABBESS.

In the amateurs' division, Mr. W. G. WILLMOTH won first prize for the best arranged single Chrysanthemums, and for one large vase of Chrysanthemums.

Fruits and vegetables are invariably well shown at Hitchin. The Challenge Cup for a collection of fruit was won by C. A. CAIN, Esq., with Grapes of fair quality, excellent Apples and Pears, and Lloyd George Raspberries; 2nd, Mr. C. H. GREEN, Hitchin. C. A. CAIN, Esq., won first prize for six dishes of Apples, once more turning the tables on Col. Pryor, as he also did for three dishes of Pears with splendid examples of Pitmaston Duchess, Charles Ernest and Beurré Alexander Lucas, but the gallant Colonel scored a win over his opponent for two bunches of black Grapes, with Mrs. Pince, while both were defeated by Major HARRISON in the class for white Grapes.

In the special class provided by Messrs. JAS. CARTER and Co., for a collection of nine kinds of vegetables, there were three keen competitors. Col. PRYOR won the Challenge Cup and has to win it once more to own it; 2nd, C. A. CAIN, Esq. Col. PRYOR also won the leading award offered for vegetables by Messrs. Sutton and Sons; 2nd, Major HARRISON. In the single dish classes Col. PRYOR was almost invincible, gaining first prizes for Potatoes, Tomatoes, Onions, Beet, Parsnips and Turnips.

H. E. LEEBOHM, Esq., Poynders End, submitted, not for competition, eight fine Persimmon fruits; and F. RANSOM, Esq., showed three huge Citron fruits.

Obituary.

Louis Leroy.—We regret to announce the death, at Angers, Maine-et-Loire, France, of this well-known French pomologist. M. Leroy was the inheritor of an honoured name in horticulture, and did much to maintain it. He had a large foreign export trade, and his firm was one of the leading ones of its kind. He was president of the local horticultural society, and at one time a vice-president of the great parent society at Paris—the National Horticultural Society of France, of which, when he died, he was an honorary member. The French Government, in recognition of his services, appointed him an officer of the *Mérite Agricole*, and a Knight of the Legion of Honour. The deceased was 77 years of age.

Robert Harkness.—The death of Mr. Robert Harkness, which took place at Hitchin on November 10, will be deeply regretted by the many rosarians who were wont to meet him at the principal Rose shows previous to the war. Mr. R. Harkness was at one time a member of the firm of Harkness and Sons, Bedale, but he commenced business on his own account, and was at first particularly successful with Dahlias and Gladioli. Eventually he turned his attention to Rose growing at Hitchin with such good effect that he was able to win the National Rose Society's Challenge Trophy for nurserymen on numerous occasions, as well as the Jubilee Challenge Trophy. Mr. R. Harkness was a most successful exhibitor as he was a fine showman as well as a first rate cultivator. He was for many years a member of the Council of the National Rose Society. In later years, after severing his connection with the business of Messrs. Robert Harkness and Co., he suffered from indifferent health.

William Truelove.—We regret to announce the death, on the 4th inst., in his 69th year, of Mr. William Truelove. He commenced his horticultural career at Kew, where his father was foreman of the pleasure grounds for 25 years. Leaving Kew in 1871 Mr. Truelove, junr., as he then was, devoted a few years to market work. In the spring of 1878 he took charge of the greenhouse and hardy plant department in the nursery of the late Mr. William Bull at Chelsea. There he remained for just over 32 years, when he resigned in consequence of ill-health. His ailment (rheumatic gout) continued to get worse so that for years he has been quite an invalid.

The late Mr. Truelove had a wide knowledge of cultivated plants, but owing to his retiring disposition it was necessary to know him well before the extent of his knowledge was revealed. He contributed numerous articles to this journal, based on a first hand knowledge of his subject.

ANSWERS TO CORRESPONDENTS.

CHRYSANTHEMUM FLOWERS ROTTING: A. G. G. The trouble has resulted from an excessive amount of atmospheric moisture and insufficient ventilation whilst in the plant house. Plants that are highly fed, and with soft growth, are more prone to damping in the blooms than those that have well-ripened, stocky shoots.

FRUIT TREES ON PINE LANDS: H. G. If you can obtain gas lime this would be the best material to use for ground that is infested with club root disease. But lime in any form would be good, and if you cannot obtain gas lime, use quick-lime. It is probable that the soil contains many of the Pine needles from the trees of the Scot's Fir, and these have an injurious effect on other crops owing to the quantity of resin they contain. As you propose to plant stone fruits, lime in some form is essential, and if you can obtain it, nothing is better than old mortar rubble.

LATE RASPBERRIES: C. F. The fruiting shoot you send is of an autumn fruiting Raspberry and resembles the one known as The Hailsham-berry. Numerous excellent varieties of autumn fruiting Raspberries are in cultivation, and at a trial conducted at Wisley last year several received awards. See *Gard. Chron.*, November 29, 1919, page 276.

NAMES OF FRUITS: G. S. 1, Flower of Kent; 2, White Nonpareil; 3, Claygate Pearmain.—A. J. 1, Lord Lennox; 2, Annie Elizabeth.—F. L. 1, Ashmead's Kernel Improved; 2, Wyken Pippin; 3, Court of Wick; 4, Duke of Devonshire; 5, Lodgemore Nonpareil; 6, Mabbot's Pearmain; 7, Dean's Codlin; 8, Beauty of Kent; 9, Margil; 10, Warner's King.—J. C. S. 10, Stirling Castle; 11, Dutch Mignonne; 12, King of the Pippins; 14, Herefordshire Pearmain; 15, High Canons; 16, Pear, Gansel's Bergamot.

NAMES OF PLANTS: C. C. The variety of the Chrysanthemum is H. W. Thorpe.—*Glencarse*. A fungus, a species of *Clavaria*.

PROPAGATION OF HARDY SHRUBS: C. W. We do not know of any work on this subject published in this country, but there are several books, notably *The Nursery Book*, by L. H. Bailey, published by the Macmillan Co., 64-66, Fifth Avenue, New York.

ROMAN HYACINTHS FLOWERING PREMATURELY: T. J. H. The bulb is not a good specimen, and it is possible that the forcing may have been done too hurriedly. In the case of all bulbous plants that are forced the roots should be encouraged to develop before much top growth is made, for which reason the bulbs should be kept in a moist, cool place for several weeks before forcing is attempted.

ROSE LEAVES DISEASED: J. R. The Rose leaves are affected with rust disease caused by the fungus *Phragmidium subcorticatum*. Both the orange and the black stage of the fungus are present. Be careful to gather all fallen leaves this autumn and burn them; next spring spray the plants with a solution of potassium sulphide.

SOFT-ROT OF RICHARDIA: M. S. The plants are affected with a disease known as soft-rot (*Bacillus aroidae*). Your best plan would be to burn all the old diseased plants and obtain fresh stock. The soil used for planting should be sterilised by baking.

Communications Received.—E. M. S.—T. L.—A. O.—A. G.—D. O. M.—A. F. T.—T. H.—A. G. G.—R. P. B.—J. B.—C. O.—J. T. M.—Country Cottage—W. C. B.—J. R.—T. S.—G. R.—P. T.—A. W. M.—T. A.—C. G.—A.—T. H.—T. A.—G. C.—L. E. T.—T. W. D.—J. W.—F.—H. H.—A. W.—A. S.—W. E.—S. C.—H. D.—G. W.—A. D. W.

THE Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.2°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London W.C.2, Wednesday, November 24, 10 a.m.: Bar. 30.0, temp. 40°. Weather—Fine.

From an account recently published by Mr. E. S. Salmon of the South Eastern Agricultural College, Wye, of his investigations into the races of Hops (*Humulus Lupulus*) susceptible to, or immune from, mildew (*Sphaerotheca Humuli*),* it appears that there is a good prospect of raising economically useful races of Hop which shall prove immune from the serious disease of mildew. Needless to say, if this prospect is realised, Mr. Salmon will have conferred a great benefit on Hop growers, who at present are obliged to spend time, labour and money in combating this pest of the Hop fields. In the article referred to, Mr. Salmon gives, so far as it may be ascertained, the history of the origin of the Golden Hop, commonly sold by nurserymen in this country. From information supplied by Messrs. Bunyard and Bide, it seems clear that one golden-leaved variety was imported from the Continent and that—unfortunately—the variety as imported consisted probably of one or more female plants immune from mildew, and some male plants which were susceptible to this disease. Another stock of the golden-leaved Hop was sent out by Messrs. Dicksons who supply a record of the fact that it was discovered in a botanic garden in Germany. From an account in *Die Gartenwelt* III, 1899, p. 476, it seems probable that this race originated in the Botanic Garden at Rostock. Curiously enough in the description it is stated that only male plants occurred and Messrs. Dicksons' stock consisted solely of male plants—all susceptible to mildew. Yet a third form of Golden Hop is known—from Messrs. J. Veitch and Sons, Chelsea Nursery, and of

this female plants are known to be susceptible to mildew. Hence it seems clear that three forms of Golden Hop are to be found in cultivation in our gardens:—(1) an immune female; (2) a susceptible female Hop; and (3) a susceptible male Golden Hop, the true *H. Lupulus aureus*. Unfortunately the immune golden female lacks vigour, and hence is not likely to find favour with commercial growers. Seed, however, of unknown male parentage, produced by the immune female, grown at Wye, gave rise to green and yellow leaved plants in about equal proportions—170 yellow, 178 green leaved seedlings. Of the seedlings from immune golden females, 72 have proved immune and 33 susceptible. It is noteworthy that the immunity appears to be absolute, whereas susceptibility may be shown to a slight or a marked extent, from which it seems probable that we have in this case to deal with a complex and not with a simple pair of Mendelian characters. What, however, is of greater practical importance is that of the seedlings from the golden mother, some which had green leaves proved to be immune, at all events under greenhouse conditions. Another direction in which Mr. Salmon is seeking his object of obtaining immune varieties of commercial value lies in testing the behaviour of the Wild Hop to mildew. He finds among seedlings of the Wild Hop obtained from Italy some exhibit resistance. It is true that they were grown in a greenhouse, but comparison of their behaviour to mildew with that of other and known susceptible varieties, gives confidence that the amount of infection in the greenhouse is a trustworthy index of immunity or susceptibility. Nevertheless, it is true that a plant may pass the greenhouse test and yet fall a victim to mildew when grown in the open—the harder climatic conditions turning the scale not from absolute immunity to susceptibility, but from extremely slight to marked susceptibility. From analogy with other cases of absolute immunity, e.g., of races of Wheat to certain rusts, and of immune varieties of Potatoes to Wart disease it is reasonable to expect that although the facts are more complex—different degrees of susceptibility occurring in the Hop—immunity will prove to be a constitutional and inherited character and if so, should be susceptible of conferment in a race possessed of the vigour necessary for a good commercial variety. Finally Mr. Salmon has turned his attention to varieties of the American Hop, *L. americanus*, and has found that among this species also, races exist, some of which are susceptible and some are immune to Hop mildew.

New Edition of "The Vegetable Garden."—

A new edition of this standard work written by MM. Vilmorin-Andrieux, and published by Mr. Murray, with the co-operation of the famous garden-expert, Mr. William Robinson, has recently been published. As Mr. W. P. Thomson, the editor of this third edition, points out, during the years of the war, vegetable growing received a decided stimulus, and it is with the idea of helping that great development that this new and enlarged edition is being published.

The Potato Advisory Committee and Wart Disease.—At a recent meeting of the Potato Advisory Committee, presided over by Mr. W. G. Lobjoit, Controller of the Horticultural Division of the Ministry of Agriculture, the Chairman outlined the Ministry's present policy for the control of Wart Disease, as embodied in the *Wart Disease of Potatoes Order of 1919*. Mr. H. V. Taylor, Deputy-Controller, referred to the work done by the Ministry during the past few years, and indicated, by means of a map showing the distribution of Wart Disease throughout England and Wales, the extent to which the trouble has now spread. The Ministry desired to give growers

as much freedom in planting Potatoes as was possible, while, at the same time, controlling the spread of the disease, and protecting the clean lands from infection. Mr. Taylor outlined the position with regard to the importation of seed Potatoes from Scotland during last winter, when the Ministry's *Scottish Seed Potato Order of 1919* was in force, and said that the Ministry was dissatisfied with the obvious weakness of legislation which placed an obligation on the importer in England only, and none on the exporter in Scotland, to ensure that no infected seed came into this country. Negotiations had been in progress with the Scottish Board for some time, and as a result the latter had issued in July last an order which rendered it necessary for the exporter in Scotland to obtain certain certificates and to furnish a declaration respecting the same to the importer in this country. The Ministry regarded this as satisfactory, and in order to prevent the possibility of any non-certified "seed" Potatoes which might slip out of Scotland being sold in this country, it proposed to issue an order to the effect that importers in this country who receive seed Potatoes from Scotland without the prescribed declaration should report the fact to the Ministry within seven days. The Committee expressed general appreciation of the improvement in the position which would result from this change, but desired to draw attention to the danger of seed being exported from Scotland without the prescribed declaration unless the railway companies in that country were given strict instructions not to load without first seeing such declaration. The Ministry promised to urge the Scottish Board to take all practical administrative steps to make their Order fully effective. It was also suggested that the Ministry should issue a statement of the standard of purity adopted by them in the inspection of growing crops of immune varieties. With regard to the importation of seed Potatoes from Ireland, the Chairman mentioned that the Ministry was still in communication with the Irish Department with a view to mutual action being taken. The next question dealt with was that of first-early susceptible varieties. The concession which the Ministry has made for 1921 to permit the planting of first-early varieties of Potatoes in Wart Disease Infected Areas, on condition that they are not planted in infected land, and that the produce is used in the Infected Areas only, was explained to the Committee. It was also indicated that the Ministry proposes to issue a general licence authorising the planting of such varieties, and that it would, therefore, not be necessary for growers to obtain individual licences for this purpose. It was, however, considered desirable that the person introducing such seed into an infected area should first obtain a licence from the Ministry for this purpose. It was announced that this policy would remain in force for a period of four years.

Wart Disease of Potatoes in Scotland.—The Ministry of Agriculture and Fisheries has issued a map showing those districts in Scotland where Wart Disease is common in gardens and allotments, and which have been declared Infected Areas. This map should be of much assistance to Potato dealers and others who desire to obtain seed Potatoes from those parts of Scotland which are free from Wart Disease. Copies of the map may be obtained on application to the Office of the Ministry at 3, St. James' Square, price 3d. post free.

Geotropism.—The familiar phenomenon of geotropism exhibited by roots and stems has long puzzled the plant physiologist. The result of displacing a root or stem from the vertical is unerring, and evidently related with the work which these members have to perform; but by what means the root or stem "perceives" and responds to the stimulus of gravity nothing sure is known. The most recent suggestion, by Professor James Small, is only intelligible to those who are conversant with recent discoveries in physical chemistry. Broadly speaking, the explanation now put for-

* On Forms of the Hop (*Humulus Lupulus*, L. and *L. americanus* Nut.) Resistant to Mildew, by E. S. Salmon. *Annals of Applied Biology*, Vol. 4, 1920

ward is that, when a root or stem changes its position with respect to the vertical, a redistribution of the particles in the cells takes place, that this redistribution is such that as a result electrical currents are developed, the effect of which is to hasten growth on one side of the displaced member and to retard it on the other. The chief interest in these suggestions lies in the experimental evidence which Professor Small brings forward in their support. On theoretical grounds he reached the conclusion that if a root were grown horizontally in an alkaline medium, it would curve, not downwards, but upwards; and similarly, if a stem be grown in an acid medium, it would curve downward and not upward. These anticipations Professor Small claims to have verified. He finds that roots placed horizontally in an atmosphere containing traces of ammonia curve upward and not downward, and that stems in an atmosphere containing minute quantities of acetic acid lose their natural negative geotropism and curve downward. The former of these observations cannot fail to recall to the minds of cultivators under glass the behaviour of the roots of Cucumbers, etc., in compost rich in manure; the lateral roots in these circumstances lose their natural directions and grow obliquely upwards into the air, possibly in response to the ammonia liberated from the compost.

Glasgow's Parks and Open Spaces.—Since 1914, the acreage of the parks and open spaces of Glasgow has been increased by 754 acres, the most notable purchases being Loch Lomond Park, 200 acres; the Linn Park, 180 acres; and the Lands of Ruchazie and Frankfield, 290 acres; while by gift or lease there is the extension of Greenbank Park, from Sir John Stirling, Maxwell, and from Sir Archibald Campbell, an area partly as a gift and partly on lease extending to 53 acres, which is to be known as Dawsholm Park. This gives approximately a total of 2,020 acres. In addition there are 92 open spaces with an area of 80 acres. Provision is made in 8 parks for football, and pitches have been allocated for 2,530 games, which means 55,660 players. About 2,000 applications have had to be refused on account of want of space. There are 38 bowling greens in 17 parks, for which tickets are issued to the extent of 400,000. In regard to tennis, the demand for accommodation is yearly increasing, and on the 5 courts, 14,000 players were accommodated this season. On the 3 golf courses, two of which are only 9 holes, the players numbered 150,000. These figures show the urgent need for additional places for active recreation purposes. One important feature of the city parks is that Glasgow possesses more Winter Gardens than any Municipality in the Kingdom, and in which the collections of plants are somewhat unique. For example, Orchids which number over 10,000 plants, call for special comment and the collection is a surprise to visitors from other cities. The musical section of the Parks Department's work has, perhaps, shown the most striking development especially in regard to the Concert Parties, and the Band performances on Sundays. The revenue which used to be about £100, is now over £7,000, while the expenditure has risen to £9,500, so that the season's arrangements are given to the public at a nett cost of £2,500.

Forecast of the World's Cereal Supplies.—The Ministry of Agriculture and Fisheries learns from the International Agricultural Institute at Rome that on the basis of data now available, and of forecasts of an average yield from the growing crops in Argentina and Australia, the Statistical Bureau of the Institute estimates that Bulgaria, the Serb-Croat-Slovene State, Canada, the United States, British India, Argentina and Australia should be able to export during the season 80 million quarters of Wheat and 3,700,000 quarters of Rye, making a total of 18 million tons of breadstuffs. Taking into account the fact that the quantity afloat on August 1, 1920, was very large, the aggregate quantities at the disposal of importing countries are estimated at 85 million quarters of Wheat and 4,200,000 quarters of Rye, making a total

of 19.2 million tons, as compared with 18.2 million tons of Wheat and Rye actually received by importing countries during last season. On the contrary, the total production of the two cereals in the importing countries is nearly the same as it was last year (32.7 million tons, against 33 million tons). It follows that overseas requirements should not be much greater than last year's, while potentially, about 1 million tons more than they imported last season will be at the disposal of importing countries. But there is no positive assurance that the potential exportable surplus will in its entirety reach the countries that may need it, as it is not certain that India will export all its apparent surplus, while, within the period still separating us from the coming harvests of Argentina and Australia, present expectations regarding these crops may be modified.

Kensington Gardens Allotments.—Sir Alfred Mond, in a written reply to Sir J. D. Rees, states that the Kensington Gardens allotments will be surrendered on or before February 28, and the ground will be restored to the public as soon as it has been reinstated. The reinstatement will take from twelve months to two years, according to the weather conditions.

Estate Management and Forestry.—Under the auspices of the Auctioneers' Institute, a college has been formed for the purpose of providing practical training in the business management of estates, and we understand that Lord Lovat, the Chairman of the Forestry Commission, has promised students of this college facilities for the study of forestry in the Forest of Dean. Premises recently purchased in Lincoln's Inn Fields will be adapted for use by the college, and it is hoped these will be available by April, 1921.

National Rose Society's Exhibitions in 1921.—The National Rose Society has fixed Wednesday, June 29, 1921, as the date of its Summer Exhibition at the Royal Botanic Gardens, Regent's Park, N.W. The Spring Rose Show will be held on Thursday, April 7; the New Seedling Roses Show on Thursday, July 28; and the Autumn Rose Show on Thursday, September 22—these three at the Royal Horticultural Hall, Vincent Square, Westminster.

Destruction of Rats.—It is gratifying to note from the Ministry of Agriculture's rat officers that our own country seems at last to have awakened seriously to its responsibility in the matter of rat extermination. In nearly all centres strenuous action has been taken and the means of advertising and of making known the objects of the campaign employed last year have been brought into use once more with good effect. At the same time the public should be reminded that there must be no resting content with the special effort of any particular week. It is a standing obligation upon local authorities and private persons to keep down vermin and to pursue the work of extermination without pause. This way lie national safety and national saving.

Fire at Messrs. Alex. Dickson and Sons Offices.—A serious fire broke out in the offices of Messrs. Alex. Dickson and Sons, Ltd., Newtownards, early on Sunday morning last. It was not possible to save the office buildings, but the fire brigade was able to prevent the fire from attacking the neighbouring stores. The material loss sustained is not very great, but the firm has lost many valuable records and documents which it will be impossible for them to replace. The chief loss is the firm's register of customers and of orders awaiting execution. Readers who have placed orders with Messrs. Alex. Dickson and Sons are asked to kindly communicate with the firm at once, giving full particulars of their orders.

Help for the Gardening Charities.—As a result of an exhibition promoted by Mr. Robert B. Ker, under the auspices of the Committee of the Liverpool Cotton Exchange, the gardening charities will benefit to the extent of about £120. Last year Mr. Ker was able to raise over £40 by similar means. The £120 referred

to is a percentage of the takings, the other portion being allocated to Lord Haig's fund. Messrs. George Couvelas, Cecil Taylor, T. Aitkin, Straham and Belk were the principal workers in connection with the exhibition, and are to be congratulated upon the success of their efforts on behalf of charities. It may be added that Mr. Mousley, Mr. Couvelas's gardener, not only contributed a splendid display, but took a leading part in the arrangement of the exhibition. In reporting the above result, Mr. Robert Ker states, "To these gentlemen I feel very grateful for, in the first place, granting permission to make an exhibition in such an exclusive place as the Liverpool Cotton Market, and, secondly, for the very kindly way in which they have supported my efforts. I believe the exhibition will now become an annual event, and thus benefit the Gardeners' Royal Benevolent Institution and the Royal Gardeners' Orphan Fund."

Appointments for the Ensuing Week.—Tuesday, November 30.—Royal Horticultural Society's Committee's Meet; Royal Dublin Society's Show (2 days). Wednesday, December 1.—British Carnation Society, exhibition at R.H.S. Hall, 12 noon to 5 p.m.; annual general meeting, 5.30 p.m.

"Gardeners' Chronicle" Seventy-Five Years Ago.—*Wooden Rollers.* I do not know anything more annoying to a gardener, who is desirous of seeing his short grass in good order, than that of having a lawn studded with worm-casts, and, at the same time, weather so wet as to render it impossible to sweep them off without making the remedy worse than the nuisance. To remedy this, and at the same time to economise labour by doing two jobs at the same time (viz., cleaning the grass and rolling the lawn), we have been in the habit of using for some time past wooden rollers, which, if applied at the time the worm-casts are in a plastic state (that is, neither too wet, nor yet too dry), will pick them up as clean as could be desired, and, at the same time, leave the Grass smooth and even. These rollers are made of various sizes, from 18 inches to 4 feet in width, and generally about 9 inches in diameter. I had some made in an octagonal form, imagining that the increased weight of the fall would cause the worm-casts to adhere more closely; but the shaking caused the dirt to fall off if it was a little too dry, and if the worm-casts were numerous; the roller soon lost its octagonal form, so I was obliged to return to the common form. A strong boy, with a 4 feet roller, will clear as much ground of worm-casts as four men with brooms; and even if the ground requires sweeping, to clear it of leaves or branches, I find the work facilitated by letting the roller precede the sweepers. On dewy mornings, in the summer time, the rollers are quite as useful as in winter and spring; indeed, comparatively speaking, more so, as they enable us to get the grounds cleared up before the family is about, a thing so much to be desired in all well-regulated establishments. I may, however, remark that, in order to enable the rollers to perform their work properly, it is necessary that the grass should be kept pretty short, as short as it can be kept by mowing every week, or, where this is impracticable, it should be cut well into the ground in the autumn. Here we occasionally mow the same piece of ground six different ways, on successive mornings, and I find that taking the season throughout, we save time by so doing; on the principle, I suppose, that a job "well done, is twice done." Let me, therefore, recommend these rollers to all who have not tried them, as I am sure they will give satisfaction. *W. P. Ayres, Gard. Chron., November 29, 1845.*

Publications Received.—*The Birds of the British Isles and their Eggs.* By T. A. Coward. 2nd series. Frederick Warne and Co., Ltd., Bedford Street, W.C. Price 12s. 6d. net. *Calendar of the West of Scotland Agricultural College, Session 1920-21.* Glasgow: Robert Anderson, 142, West Nile Street. *La Pomme De Terre.* By S. Mottet, Librairie Agricole de la Maison Rustique. Paris: 26, Rue Jacob.

THE ROSARY.

SEASONABLE HINTS.

WHILST October may be regarded as the best month in an ordinary year for the planting of Roses, the weather of November has been so remarkably mild that October has so far had little advantages over it this season. So summerlike has the weather of late autumn been that the plants retained their foliage unusually long, and even now Roses in most gardens are carrying a great number of their leaves. It is always wise to wait until plants are thoroughly dormant before disturbing them for transplanting, and Roses are no exception. The trouble is that the ground is, in many places, so very dry that some of the Roses which were set in October scarcely had sufficient root moisture for their needs, and some growers were forced to resort to watering.

The ground is very warm for the time of the year and all autumn-planted subjects should derive great benefit from it, and we may reasonably expect the plants to be well established by next spring.

The wood of Roses has ripened beautifully, which will greatly favour next season's blooming.

Whilst many do not favour the practice of protecting Roses in winter, this may be more necessary than usual this season, if the weather turns very severe suddenly. In the south, protection is, of course, not so urgent as in gardens in the more northern parts. The old-fashioned plan of sticking sprigs of evergreens in the ground on the windward side of the plants is very effectual in warding-off cutting winds, when frosts seem to do more damage to plants than while the air is still. If litter, such as dry Bracken Fern or loose straw, is used about the base of the plants, precaution must be taken to secure it in position, or it will be blown away by the first gale. Whilst an excessive amount of moisture is harmful about the collars and stems of the plants, much good results from drawing loose soil about those parts, as this is one of the most effectual ways of protecting the bottom eyes from injury by cold.

Stocks of Roses are more numerous than during war-time, but there is still a shortage of some things; standards especially. There is such a wide selection of beautiful varieties of Roses for all purposes, and the special requirements of the particular garden may easily be studied in making a selection. Many of the newer sorts are extremely beautiful, and a few novelties should be tried each season. The one illustrated in Fig. 119, named after the popular Secretary of the National Rose Society, is a glorious crimson-coloured H. T., and received the gold medal of the National Rose Society on September 23 last.

Those who are able to obtain wild Briars from the countryside should procure a supply as stocks for standards whilst the weather remains favourable. These should be trimmed of much of the top-growth and planted about 18 inches apart in rows for budding next summer. In digging up these wildings reject any that are green and sappy, also any that are very black, denoting old age or an unhealthy condition, also any that are hide-bound. When the standard Briars have been planted, the seedling Briars of such as the Manetti and Multiflora types should be planted. These should be put well into the soil, and will not be too deep if they are buried half their depth. These smaller stocks may be put in rows made 2 or 3 feet apart and planted about 9 inches from each other in the rows.

Whilst securing the Briars from the hedgerows, suitable cuttings may be obtained from healthy growth with firm wood and with very little pith. Take out all the eyes in the part that is buried and leave three or four healthy buds on the part above ground. If the soil is naturally of an open texture, roots will form freely. But it is always an advantage to have

little sand or grit at and around the base of the cutting.

In planting Roses from the nurseries make a careful examination to see that no suckers are developing from the roots, and take care to trim the latter with a sharp knife. Standards

need the support of a stake to keep the stems a good shape and prevent the plants being blown over by gales. Some growers top-dress their newly planted Roses with thick mulches of manure, but I do not advise this being done where the soil is naturally very heavy in texture.

Plants in pots intended for forcing this winter should be brought indoors and allowed to develop very slowly. The temperature should be about 55° by day and the house ventilated through the top apertures whilst the weather remains fine. Close the ventilators early in the afternoons, after damping the floor of the house. Towards the end of the present month these plants will be nicely on the move and another batch may be introduced to provide a succession of bloom.

The present is a suitable time to graft dormant Roses under glass.

The stocks, either Manetti or Briars, should be well established in pots 3 inches in diameter and specially prepared for the purpose during the past season. The plants should be worked and then placed under a frame in a light glass-house. Bottom-heat is necessary, and this is

INDOOR PLANTS.

APHELANDRA.

THERE are several species and varieties of Apehendra, all very useful winter-flowering subjects. Young stock recently potted requires careful watering until well established at the roots. *A. aurantiaca* and *A. aurantiaca* var. *Roezlii* have very showy, orange-scarlet flowers; *A. nitens* has vermilion-scarlet flowers and very dark-green, shining leaves. Other good garden species are *A. squarrosa* and *A. tetragona*. Some kinds including *A. Blanchetiana*, *A. squarrosa* var. *Louisae* and *A. Chamissoniana* have beautiful silvery-white markings on their leaves. The plants require a stove temperature of 65° when growing; when in flower they may, with advantage be removed to a house having a cooler and drier atmosphere. After flowering they should be afforded a rest by keeping them cooler and fairly dry at the roots. If large plants are required they should—when started into growth during the spring—be shaken out and repotted into smaller receptacles and grown in a stove tem-



FIG. 119.—ROSE COURTNEY PAGE; A NEW CRIMSON H.T. VARIETY.

best provided by hot-water pipes under the staging, which should be covered with a layer of fine coal ashes. It is advisable to introduce the plants into the glass-house for a week or so prior to grafting, as it is best to have a stock a little in advance of the scion. The grafting is done in the usual way, selecting stocks and scions of about equal diameter, and binding them with raffia before covering with grafting wax. The operation will be successful if the temperature in the frame is kept at about 50°. Later, a little ventilation may be admitted a few hours daily and, when the stock and scion appear to be fairly united, the temperature may be raised, and the amount of ventilation also increased. It is well not to grow these grafted Roses for too long in the close frames after it is seen that the operation is successful. *Sententious.*

perature during the summer. If only small plants are required, they are best propagated every year. Cuttings made from young growth root readily during the spring and summer; or the plants may be raised from seeds.

RONDELETIA ODORATA (R. SPECIOSA).

As plants of this species pass out of flower they should be pruned and have weak growths thinned. If afterwards placed in a warm house they will soon start into growth and flower. Where provision is made for a succession of a few plants treated in this way this pretty subject may be had in flower all the year round. *Rondeletia odorata* is a good summer-flowering species, and makes a fine specimen planted out in a cool greenhouse. *R. gratissima* is another beautiful species. *J. C.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Propagation.—Cuttings of Gooseberries and Currants may be inserted any time during the winter, but I prefer rooting them at the present time. Better fruit is obtained by planting young bushes frequently. Propagate from clean, healthy trees and choose only those varieties that do consistently well in the locality of the particular garden. Select straight shoots, or prunings, for use as cuttings, and rub away the basal eyes or buds, with the exception of Black Currants. Insert the cuttings about 6 or 8 inches apart in a trench. Old mortar rubble or coarse sand may, with advantage, be used in the bottom of the trench. Tread the soil about the cuttings as firmly as its condition permits. The cuttings are apt to become loosened in the ground by the action of frost, and should be made firm again by treading on either side of the rows.

Filberts.—The Filbert will grow in almost any soil, but invariably thrives best in a somewhat dry, sandy loam. In strong, moist, loamy soils trees trained in bush form are liable to make too much wood growth. Intending planters would do well to mix broken bricks and mortar rubble with soil of a heavy nature. The distance between the rows may be 10 feet each way and the plants should be kept within limits by pruning. Old-established trees that have given good crops should be fed with well-decomposed manure. Remove some of the exhausted top soil from around the base of the tree and cut off all suckers, otherwise the manuring will be of little avail, for the nourishment from the manure will only tend to encourage the development of suckers. In the autumn all strong laterals may be shortened to within five or six eyes, and if the growths are too numerous they should be thinned accordingly.

The Fruit Room.—Those who are fortunate enough to have sufficient fruit to store should give them every necessary attention to prevent loss by contamination. One bad fruit, if allowed to remain, will quickly affect others in its vicinity. Whilst frost must never be allowed to enter the fruit store, it is a mistake to keep fruit in a dry, warm atmosphere. Admit air through the ventilators whenever possible until the "sweating" of the fruit is over, when less air will suffice.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Carrots in Pits.—Where pits are available for raising Carrots prepare a mild hot-bed, chiefly of tree-leaves. The fermenting material should be in a damp condition and it should be trodden firmly, after which nine inches of light soil should be spread on the surface. When there is no danger of the heat from the hot-bed being excessively high the seed may be sown in drills drawn six inches apart and covered very lightly with soil. The latter should be sufficiently moist to permit of deferring watering until the seedlings show through the surface. Keep the house or pit close until this takes place, then admit air on all favourable occasions, but prevent cold draughts from reaching the young plants.

Seasonable Work.—All fallow ground should be trenched or dug deeply, leaving the surface as rough as possible to expose the greatest amount to the action of frost. By doing this heavy soils will work easier in the spring, indeed all soils will be improved by this treatment, besides which, grubs and eggs of injurious insects will be exposed to destruction by birds. By doing this work early, opportunity may be taken during times of severe frost to again turn over with forks the sur-

face of land which has recently been cultivated, and thus let the frost penetrate deeper than it otherwise would. In trenching land place Cabbage stumps and other refuse of a slow decomposing nature evenly in the bottom of the trench. To trench or dig land when it is under snow or frozen, is to make the ground cold, sodden and unworkable for a long time; therefore tillage should cease when these conditions prevail.

Rhubarb.—Roots lifted and exposed to the frost should now be taken to the forcing house. To replace the plants which are to be forced, prepare new beds during the winter. An early opportunity should be chosen to trench a site for the reception of Rhubarb plants in the coming spring. The ground should be well manured, as Rhubarb is a deep-rooting subject. The production of forcing roots being the primary object, a warm position should be selected for planting to encourage early ripening of the crowns.

Plants in Frames.—Lettuce, Parsley and Cauliflowers growing in frames should be kept free of decaying leaves. Lighten the surface soil by pricking it over so that it may dry and help to maintain a buoyant atmosphere about the crops. Give the plants full exposure during the day, and admit air freely during mild weather, but use the lights when frost threatens.

Herbs.—Mint propagated in boxes for forcing should now be grown in a light position in a warm house. Failing any special preparation, roots of Mint and Tarragon, if now lifted from the open ground and packed closely together in boxes with fine soil worked amongst the roots, will give good results. Roots of Chives and Sorrel also force easily. Water the soil about the roots if it is the least dry.

THE FLOWER GARDEN.

By SIDNEY LEAG, Gardener to the Dowager Lady NUNBURNHOLME, Warton Priory, Yorkshire.

Buddleia.—The texture of soil is not of paramount importance in the general cultivation of Buddleias; still, north of London, the species *B. Veitchiana* and *B. Colvillei* require a deep, very porous soil, and the shelter of a south wall to enable them to withstand the winter. The variety *variabilis magnifica* grows strongly in medium loam, trained on an exposed, west wall, and also as a bush in the open. *B. globosa* and *B. variabilis* and its varieties should be hard pruned in spring to obtain fine flowers. These choice shrubs are worthy of extended cultivation, and may be planted now.

The Wild Garden.—Seasonable work for some few weeks to come may be found in developing the natural resources of the landscape. Mossy pathways may be formed, leading to points of interest, and large stepping-stones used, to provide a means of traversing boggy places with ease. Wooded places should be thinned sufficiently, here and there, to allow the sunlight to reach groups of Azaleas and similar subjects. Hardy, non-fire-loving plants, including Azalea, Rhododendron, Kalmia, and certain species of Iris are assets to most wild gardens. The employment of hardy Ferns, in varieties adaptable to wet, sunny, and shady positions, is commendable, and the value of Ferns is enhanced if species of Liliun are planted in conjunction. Varieties of *Rosa rugosa* should be planted broadly at this season, where their conspicuously coloured hips will show to advantage; whilst Scotch Briars may be planted in groups of threes to form pleasing bushes. Unfortunately, the beautiful Austrian Briar requires a warm position, and is not, generally, suitable for inclusion in the wild garden. The removal of old flowering wood from Brambles should no longer be delayed, and young growths of from 10 to 14 feet long may be looped gracefully over evergreens in close proximity; for this purpose, a long, forked stick is useful. Varieties of Everlasting Pea are worth planting, and, besides growing freely through medium-sized bushes, they are very attractive when rambling over grassy mounds, large stones, and old tree stumps. Rough grass should again be mown closely with a scythe, and the value of so doing will be apparent in the spring.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers.—Plants in full bearing require liberal feeding and top dressing, little and often, to keep them prolific and healthy. If the bottom-heat is obtained from fermenting leaves and hot-water pipes combined, the roots will, provided the drainage is free, assimilate more stimulating liquid than many imagine, but it should be weak and of a varied character; if 10 deg. warmer than the bed so much the better. Liquid manure, guano and scot water are all good fertilisers, both for root watering and damping, but only the clear liquid should be used and in a weak state. The material used for top dressing can hardly be too rough in texture. Moderately light sandy loam, from which the finer particles have been shaken out, rough pieces of lime rubble or plaster with a little charcoal added constitute a suitable compost for use as top-dressings and a supply should be kept in a warm corner ready for use as required. A very thin layer answers the purpose best. Every part of the house should be kept clean, including the glass; no decaying matter should be left lying on the bed; there should also be a constant inlet of fresh air on all favourable occasions. Direct syringing having been discontinued, plenty of atmospheric moisture and a brisk bottom-heat should be maintained. Avoid checks to growth such as would be caused by the removal of old leaves which look rusty and invite their removal; it is better to retain such foliage for a time than run the risk of the plants bleeding. A leaf here and there may be removed after the turn of the year to allow extension of the best lateral growths; pinch out the points of weak shoots and remove all male blossoms as they appear. The latest plants put into houses after Melons were cleared in October will come in useful at a time when the plants now in bearing are on the wane. Cucumbers will be available in February and March from these plants if they are kept growing steadily through the year. A temperature ranging from 65° to 70° at night, rising to 70° or 75° on fine days will be generally suitable, but much depends upon the condition of the plants, as they will continue to grow freely in a minimum warmth of 60° and a maximum of 70°, always provided the bottom-heat is brisk, say, 75° to 80°. Do not pinch the plants until after the commencement of the year, neither should they be syringed overhead.

Late Muscats.—Care must be taken that an excessive amount of fire-heat is not used in the late Muscat vinery, neither should the berries be allowed to suffer from damp during the fall of the leaf. A gentle warmth in the pipes with a moderate circulation of fresh air on fine days will generally keep the berries fresh and plump. Much depends upon the house and its surroundings, but a temperature of about 50° at night will be suitable.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Chrysanthemums.—As these plants pass out of flower, those required for stock purposes should be carefully labelled and placed in cold frames, or in fruit houses where the trees are at rest. Where Chrysanthemum plants in pots have been stood closely together, with the result that growth has become drawn, the weak shoots should be shortened in order that short, sturdy shoots suitable for use as cuttings may develop. It may, however, be necessary to secure cuttings of certain varieties at once and propagate from them as soon as they are large enough; in fact, such practice is necessary with some sorts, as it is only by this method satisfactory plants are obtained. For general cultivation there is no need to start propagating Chrysanthemums until early in the new year. To obtain plants for exhibition purposes it is necessary to root many of the varieties during December. It is never advisable to propagate from plants that have been highly fed; indeed, it repays to plant a few

specimens of each variety in the open ground for the special purpose; these may be lifted during the autumn and put into pots or boxes. Such plants generally give a good supply of strong, healthy cuttings. The cuttings are best rooted in cool conditions. They will develop roots freely under hand-lights in a cool house or frame. Although they take longer to root than when more heat is used, such plants are strong and sturdy from the beginning.

Helleborus niger.—The Christmas Rose and its varieties, especially *altifolius*, variously known as *var. major*, *giganteus*, *maximus*, and *grandiflorus*, are very useful during the winter for supplying cut blooms. Strong clumps may be lifted and placed in a cool house or frame. This is necessary, not so much to bring them forward as to protect the flowers and keep them clean. The same purpose may be served by placing hand-lights over strong clumps out-of-doors; if this is done a sharp watch must be kept for slugs, which are very fond of the flowers.

Cacti.—Succulent plants require great care in watering at this season, as many of them need but very little moisture during the winter. Judging by the number of inquiries one receives about them, this class of plant is becoming increasingly popular, due, no doubt, to the fact that many have abandoned the cultivation of stove plants. Cacti and succulent plants generally are much less exacting in their cultural requirements than stove plants, and include many interesting subjects which appeal to the plant lover who does not judge a plant by its capacity to produce an armful of cut flowers for the decoration of the house.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

Cymbidium.—At the present time these Orchids occupy a foremost position in many collections; the numerous hybrids that have been raised during the past few years have created a new interest in the genus. Plants of *C. Lowianum*, *C. Lowie-aburneum*, and *C. giganteum* that have not been repotted recently will probably be showing their flower spikes, and should be afforded copious supplies of water. Specimens not yet pushing up their scapes should be kept on the dry side, otherwise they will commence to grow rather than produce flowers. *C. Hookerianum* often fails to open its blooms, especially in gardens near large manufacturing towns. At this season the plants should be exposed to the fullest amount of light. When the flower spikes begin to grow the plants should be removed to a house having a temperature of about 60°; at other times these Orchids will succeed in the cool or intermediate houses. Cymbidiums are strong-rooting subjects and require ample pot room. A suitable rooting medium consists of rich, fibrous loam and good peat in equal parts, with a moderate sprinkling of crushed crocks. When in active growth the roots need an abundance of water, especially when the plants have filled their receptacles with roots. During hot weather the plants should be sprayed overhead once or twice daily. These Orchids thrive in a corridor connecting the various houses, or in almost any division where there happens to be vacant space. Scale insects often attack the pseudo-bulbs of Cymbidiums; the winter affords opportunity to thoroughly cleanse the plants of these pests. An old tooth brush is excellent for removing the insects from the base of leaves and around the pseudo-bulbs. Two distinct Cymbidiums are *C. tigrinum* and *C. Devonianum*, which have pendant racemes, and are much smaller in habit than the majority. They may be grown in pans suspended from the roof rafters of the intermediate house.

Oncidium cheiroporum.—This is the most delightful of the small-flowered Oncidiums that produce their scapes at this season. A well-flowered pan of this Orchid, with its arching spikes of bright, buttercup-yellow blooms, is always attractive. It is easy of culture, and being dwarf, occupies but little space.

DELPHINIUM BLUE BUTTERFLY.

A VERY fine mass of clear gentian-blue colouring was provided this year near the Broad Walk at Kew by a bed of *Delphinium Blue Butterfly*, or, as it is often named, *Larkspur Blue Butterfly* (see Fig. 120). This plant is best raised from seed, sown in heat in February, the seedlings being pricked out and grown on in the usual way, for planting out. Thus treated, the plants may be relied upon to give a succession of bloom from June until October if they are planted in fairly good soil. This annual *Delphinium* may also be sown in July in the open ground and planted into its flowering quarters in the following autumn. Under both conditions it gives good results. Well-grown plants grow to a height of 15 in. to 18 in., and the flowers are carried on light, graceful stems. When cut the flower-

Horticultural Society on November 2 by Messrs. Charlesworth and Co., demonstrates a point frequently advanced by us to the effect that the scope of the hybridist should not be confined to crosses with a view to getting new hybrids, but an equally interesting and useful field of operations is to be found in improving standard species by fertilisation of the best types. Some years ago Messrs. Charlesworth realised the necessity for working among the best forms of *Odontoglossum crispum*, which even to-day is a first favourite for a cool house. Their success more than realised their expectation, and at the Royal Horticultural Society, March 26, 1918, they showed several of the class known as "The President" type, with large pure white flowers; a Preliminary Commendation was given. Since that date other grand examples have been shown, culminating in the new strain of great size and beauty known as "The Renown" strain, shown on the 2nd inst.



FIG. 120.—DELPHINIUM BLUE BUTTERFLY.

ing growths are ideal subjects for filling small vases.

Delphinium Blue Butterfly is seen to best advantage when grown, as at Kew, and used to fill a small bed—either with no border, or edged with white or grey. A good edging subject is *Alyssum Snow Carpet*. *Delphinium Blue Butterfly* is also a good subject for pot culture, if seedlings are pricked out in spring and grown on, as sturdily as possible, in 48- or 32-sized pots. When grown in this way it is very useful for vases indoors.

W. L. L.

ORCHID NOTES AND GLEANINGS.

HOME RAISED ODONTOGLOSSUM CRISPUM.

THE fine selection of their seedling forms of typical, white *Odontoglossum crispum* included in their Gold Medal group at the Royal

SOPHRO-LAELIO-CATTLEYA AXHOLME VAR. LETTICE.

At the Royal Horticultural Society's meeting of November 16, Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr., Mr. Collier), showed a very pretty hybrid resulting from a cross between *Sophro-laelio-Cattleya Helen* (L.-C. Gottleina × S.-L. heatonensis) and L.-C. Colmaniana, as L.-C. Lettice, being unaware of the fact that A. Francois, Esq., Doncaster (gr., Mr. D. Pitts), had shown a form of the same cross at Manchester on October 7 and received a Certificate of Appreciation for it, as S.-L.-C. Axholme, of which it is therefore a variety.

These pretty *Sophronitis* crosses, some of which, as in the present case, approach the *Laelio-Cattleyas*, are yet distinct from them, and generally bear large flowers on plants of rather small growth. Sir Jeremiah Colman's plant bore a fine flower with broad petals, the sepals and petals being pearl-white tinged with rose, and the well-rounded lip bright purple with cream-white base marked with small purple lines.

EDITORIAL NOTICE.

Letters for publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

THE MARITIME PINE FORESTS OF GASCONY.

BEFORE proceeding to give an account of the Maritime Pine Forests of Gascony as they are to-day, it will be necessary briefly to review the history of the operations which have led to the afforestation of an area of some 800,000 acres which little more than a century ago was a wilderness of shifting sand and swamps.

The first efforts towards a systematic fixation of the dunes were made by an engineer, Brémontier, from 1787 to 1795; in the latter year operations were stopped for lack of funds. They were resumed in 1801 by a Commission appointed by Napoleon Bonaparte, but, as with many others before and since, its members were unable to agree upon the methods to be adopted, and in 1817 the work was entrusted to the Administration of Roads and Bridges, and was carried out under the supervision of the Chief Engineer of the Department. This organisation was preserved until 1862, when practically the whole area had been afforested, and the administration was transferred to the Forest Department.

The tracts included in this brief historical survey extend along the coast of the Bay of Biscay from the River Gironde to the River Adour, a distance of about 150 miles, and have a width which varies from 2 miles to 5 miles. In order to gain some idea of the appearance of the country prior to 1787, the words of an eye-witness may be quoted. He says "the inner aspect of the dunes, seen from one of the summits of the eastern range and looking towards the sea, presents an appearance of chaos and indescribable disorder, without a single trace of vegetation."

Some of the dunes attain a height of 200 to 300 feet, and they form a series of parallel ranges running N. and S., parallel with the coast-line. They consist of quartzose sand blown inland from the shore by the prevailing winds, which alternate between N.W. and S.W. The outline of a typical dune is made up of a gradual seaward slope, where it is exposed to the shearing action of the wind, and a steep slope on the leeward side, representing the natural angle of repose of the sand grains.

A great deal of damage has been done by the shifting of these dunes inland, sometimes at the rate of 14 feet a year, by the damming of streams, causing swamps and inundations, and by encroachment on forests and agricultural crops and even on dwellings. (See Figs. 121 and 122.) This last occurrence was happily rare, but a case is known of a church previously buried being exposed again by the shifting of the dune which covered it. Some of the lagoons formed by the damming of streams assumed gigantic dimensions, and two of them, although they have subsided considerably, owing to the draining action of the forests, are still the largest in France, each having an area of over 14,000 acres. The accumulations of sand along the coast have frequently blocked up the estuaries of streams, which have thus been diverted parallel to the coast-line in order to seek another outlet to the sea.

In order to prevent further inroads of sand from the sea, a gigantic littoral dune has been artificially raised for a distance of 140 miles along the coast. This was done by an ingenious method, by means of 6-foot planks driven into the ground to about half their length and about an inch apart. Sand accumulated along the seaward edge of the line of planks, and some of it trickled through to the other side by means of the spaces between them. In order to prevent this sand from being blown inland, a wattle fence was erected at a convenient distance behind. As soon as the planks were almost covered, they were raised by means of levers, and fresh wattle fences were placed in position as the others were buried. By this means the dune was raised to such a height that no further inroads of sand could take place. The fixing of the littoral dune was carried out by means of grasses, including especially *Psamma arenaria*, *Carex arenaria*, and *Elymus arenarius*, which were generally sown, though *Psamma* usually came naturally in sufficient quantity. These grasses, by means of their long, spreading rhizomes and deep-growing roots, exert a binding action on the loose, incoherent sand. (See Fig. 123.)

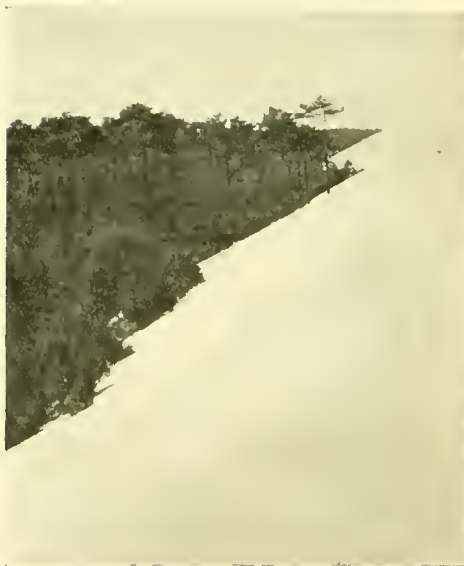


FIG. 121.—SHIFTING SAND DUNE ENCRDCHING ON MARITIME PINE FOREST: FIRST STAGE.

The fixation of the inland dunes was carried out by sowing a mixture of Maritime Pine (*Pinus Pinaster*) with the grasses already mentioned, and sometimes Broom (*Cytisus Scoparius*) and Furze (*Ulex nana*). These plants are nitrogen fixers, and were sown in order to supply the needs of the future forest crop with regard to combined nitrogen. After the seed had been sown, it was usually covered with brushwood, or strips of turf were pegged down in squares as a preliminary measure, and the sowing carried out within them.

Before giving an account of a typical forest which has originated in this way, it will be well to bear in mind the physical conditions which are present in such a locality. The sand of the dunes becomes rapidly heated during the day, and it cools very rapidly at night, which encourages the formation of dew, but increases the danger from frost. The difference between the mean temperature of day and night may be as much as 40° to 50° C. The absorbent quality of sand is very slight, par-

ticularly of quartz sand, and the water content is also very small, increasing, however, with the size of the individual grains. The nutritive value depends upon the chemical constitution of the sand. Pore quartz sand is sterile, but most sands contain an admixture in varying proportions of lime, felspar, mica, etc., according to the nature of the parent rock from which they were derived.

An analysis of the sand of a typical dune in the Landes gave the following results; the figures represent percentages:—Water, .39; oxide of iron, .16; lime, trace; magnesia, .06; potash, trace; phosphoric acid, .06; sulphuric acid, .01; organic matter, .25; insoluble residue, 99.0.

It must be borne in mind that the strong westerly winds which blow in from the sea are laden with moisture containing chlorides and other salts in solution. A fairly average timber production of 450 cubic feet per acre is realised in the forests grown on such sand, and this only serves to illustrate the well-established fact that the actual quantity of salts required in a soil to support a vigorous growth is not an important factor, so long as they are present in a diffused state in the soil and can be made available for building up the plant body.

The forest of Sainte Eulalie, in the Department of the Landes, may be taken as typical of the forests as a whole. It has a total area of 18,000 acres, and the soil consists of pure sand overlying Tertiary sandstone but pans and impermeable substrata are met with occasionally. The soil supports a vigorous undergrowth of Broom, Furze, and Brambles, as well as a Heath (*Erica scoparia*), the roots of which are used for making blacksmith's charcoal. These weeds are a source of danger from fire. The forest was originated by direct sowing, and after the age of 50 years is kept in a very open condition in the interests of resin-tapping, which has developed into a very important industry. (Figs. 124, 125.)

A protective belt 1,000 yards wide is maintained along the coast in which no felling is carried out, with the exception of dead and dying trees, and a very conspicuous feature of the outer edge of this belt, in which the trees are exposed to the full force of the wind, is the stunted and gnarled growth of the trees correlated with a considerable increase in the length of the individual needles. One of the commonest plants associated with the Maritime Pine in this belt and extending seawards beyond it is *Tamarix europaea*.

A rotation of 75 years has been adopted and this is divided into 15 "tapping series," which means that when trees have reached the age of 70 years they are tapped to death for 4 years and felled in the 75th; this applies both to trees taken out in thinnings, and to the final crop. The woods are regenerated naturally after clear felling, the area of the annual coupe or felling area being 250 acres, but during the war, in order to meet the demands of the armies in France, the area was increased threefold. Natural regeneration springs up in great abundance, and this is due to the fact that the Maritime Pine seeds regularly every year, and also to the fact that the seeds are capable of maintaining their vitality in the ground for several years. Unfortunately from the point of view of economic forestry this is also the case with the seed of the Broom, which comes up in great abundance with the Pine seedlings, and is the cause of an important item of expenditure when it interferes with the free development of the Pines and has to

be cut back. At the same time the Broom serves to protect the young Pine growth against damage by frost and drought.

As soon as the trees have reached a certain dimension, which corresponds to an age of about 50 years, tapping operations begin. There are two methods of tapping, known respectively as "gemmaage à vie" or light tapping, and "gemmaage à mort," or tapping to death.

Light tapping is carried out on all trees until

The creation of wounds (blazes) is a source of danger from insects and from the spores of fungi. Damage has been done, though not on an extensive scale, by *Armillaria mellea*, and the usual method of trenching round infected trees has proved efficient in preventing the spreading of the disease by means of rhizomorphs and root infection.

The greatest danger to which these forests are exposed is that of fire, and a very efficient system of fire traces has been cut to relieve

in the history of forestry. The benefits which it has conferred on the community are inestimable, both directly and indirectly. Although most of the forests are owned by the State, a few are communal forests, and the revenue from these is sufficient to pay the rates and taxes of the townships to which they belong. Indirectly the greatly enhanced value of land due to the drainage of swamps and the prevention of inroads of sand, has no doubt been greater than the actual annual income which these forests represent to the State. I should add, that for permission to use the photographs from which the accompanying reproductions were made, I am indebted to Prof. R. S. Troup, Professor of Forestry, University of Oxford. E. H. Harwood, B.A., Exeter College, Oxford.

CURIOUS OCCURRENCE OF ORCHIS PYRAMIDALIS AND PLANTAGO CYNOPS.

I AM afraid I made a slip of the pen in my note which appeared in the *Gardeners' Chronicle* of November 13 (see p. 237). It should have been *Orchis pyramidalis* (not *hircina*) which Sir Herbert Maxwell found on the sea-sand in Wigtownshire: the comminuted shells affording the necessary calcareous constituent. In these conditions it occurs also on the dunes of Alderney and Jersey. A still more puzzling instance of plant occurrence is that of the European *Plantago Cynops* which was sent to me for identification during the summer by Miss Ridley. It was found in Kent by a school-girl on the slopes of a dry valley, in the chalk, far removed from houses and without Larch-planting or other adventive cultivation in the vicinity. It occupies a dry flinty bank below woodland and above corn cultivation, and is on soil which does not appear to have been disturbed by man.

It occupies a patch of about four yards long, and must have been there some time. Its mode of introduction—assuming that it is not a native—can only be guessed at. Birds may have brought it in their plumage or crops; its distance from the nearest Spanish or French locality is perhaps beyond the possibilities of its being a wind-borne species. It has no claims to beauty, so that it is not likely to be of garden origin. In Berkshire and elsewhere, *Euphorbia Cyparissias* has appeared in a similar manner, but usually Larch-planting has been near.



FIG. 122.—SHIFTING SAND DUNE ENCRONCHING ON MARITIME PINE FOREST: SECOND STAGE.

they reach the age of 70 years, and in the protective belt it is the only method used. The principle is the same in both cases, the difference being only one of degree. The bark is removed up to the height of the first year's "blaze," in order to create a clean surface, and this operation is carried out in February. Tapping operations proper begin in March and end in October. At the first blaze a wound is made up to a height of a few inches and not more than an inch deep, and an earthenware pot is placed in position at the base of the tree with a metal lip inserted into the blaze above the cup to guide the resin into it. The blaze is "refreshed" or carried higher and higher up the tree about once a week on the average, the cup being moved up at the same time. In the case of light tapping only one blaze is made at a time, but in the case of tapping to death there is no limit to the possible number of blazes except the circumference of the trees. (Fig. 125).

The resin which accumulates in the pots is collected in wooden drums, into which the solid incrustations of colophony from the surface of the blazes, is also scraped. The products are then transported in barrels, on mule carts, to the distillery, where they undergo an elaborate process of distillation, with turpentine and solid resin as the final products. The total yield for the whole of France is as follows:—turpentine, 25,000 tons; resin, 75,000; total, 100,000 tons.

The question arises as to how far the operation of tapping saps the vitality of the trees. The damage to the timber from a commercial point of view is negligible, large quantities of it being imported to this country for use as pit props. During the war when supplies from Scandinavia and Russia were cut off, and home production utterly inadequate to the demands, we were almost entirely dependent upon supplies from France, which were greatly increased as an emergency measure.

this danger to a minimum. These fire lines form the boundaries to the annual coupes, and they are about 30 ft. to 40 ft. wide; they are kept clear of all deadwood, rubbish, etc., and are scraped clean every three years. A number of watch towers has also been established, but there is no separate staff set apart for fire



FIG. 123.—ARTIFICIAL LITTORAL DUNE IN PROCESS OF FORMATION: PALISADE OF PLANKS JUST VISIBLE IN THE BACKGROUND.

protection; there is always a sufficient number of men in the forest attending to the operations connected with tapping, to ensure that a fire would be discovered.

The afforestation of the dunes of Gascony is undoubtedly one of the greatest achievements

The possibility of pheasant-food being a cause of introduction should not be overlooked, but in the case of *Plantago Cynops* there seems nothing to support it. Nor could I see any suggestion of its being brought there by man or his operations. G. Claridge Drew.

NOVEMBER VEGETABLES.

Owing to the exceptionally fine weather this autumn we have been making use of various vegetables from the open that it was anticipated we should have had to obtain from under glass. Such crops as Peas and Beans have finished and Runner Beans met their usual fate from the first severe frost, but other vegetables, such as Lettuce, we are able to use freely from the open. Of the crops mentioned in my previous notes we are getting full supplies of the following:—

All the varieties of Cabbages, Savoy and Coleworts noted before, raised from sowings made between February and June, are available, and are at the moment providing the bulk of the supplies of these Cabbages. Cauliflowers Early Giant, Autumn Giant, and Mammoth are still being cut from plantings made in May and June from the sowings of April and May. We have recently completed the planting into frames of seedling Cauliflowers raised during August and September, allowing 4 inches each way between them. These will provide plants for early cropping under glass, and for planting in the open to continue the succession. Of Celery we are still using the early plants grown on the flat, the details of which were given in the last notes, and we have no need yet to commence lifting the plants that are carefully earthed up for use during the winter. The same three varieties are being lifted (Aldenhall Pink, Standard Bearer, and Invincible White), and I regard these as ideal varieties for all purposes.

It seems strange to state that in the middle of November we are using Vegetable Marrows in their "green" stage, but the fact remains that we are doing this. Only comparatively few days have gone by since frost destroyed the vines, but we are still able to use fruits which were cut before they became frozen. It is not difficult to keep Marrows in store for some considerable time.

Spinach, which had just come into use when last I wrote, is now yielding a good supply of leaves. This is a most valuable vegetable, and different kinds are available practically throughout the year. It is also a very hardy vegetable for winter supplies, and not difficult to cultivate.

Of root vegetables, previously reported we are now chiefly depending upon the stocks lifted and stored under suitable conditions for winter consumption.

Since last month there have been several important additions to the list of crops available, whereby we are able to maintain a varied supply of vegetables.

The Jerusalem Artichoke was found to be a most valuable substitute for Potatoes during the time of shortage caused by war conditions, when many folk first realised the value of this tuber as a food. Many still rely on the old purple-skinned type, and neglect to grow the improved white sort, which is greatly to be wondered at, as the white variety is far superior in shape and flavour to the older sort. We plant the "seed" tubers during February, and thereafter have no trouble with the crop until we cut down the growth about the end of October, leaving the tubers in the ground to be lifted as required, as frost does not adversely affect them.

Celeriac is another valuable root-crop, but not so well known in this country as on the Continent—which is very strange, as it is certainly most delicious when cooked and served with white sauce. Sown during March, at the same time as main crop Celery, the plants are raised in the same way, and should be finally planted in well-prepared ground early in May. Celeriac should be grown on the flat, and, like its relative, Celery, it requires a considerable quantity of water when grown on light soil, and during hot, dry weather. We rely principally on Prague Celeriac.

Parsnips, too, are in full use, and are to be classed with the vegetable just dealt with as a very important root crop for food. The seeds are sown about the second week in February, and our two principal varieties are Tender and True and Student. The plants require as long a season of growth as possible, and we do not lift and store the roots until March in the

following year, as Parsnips are perfectly hardy and improved in flavour by exposure to frosty weather. When very severe weather threatens, we take the precaution to lift sufficient of the crop to carry us on till more open weather prevails.

Salsify and Scorzonera are two very useful root vegetables, which require similar treatment. We sow the former at the beginning of April on well-tilled ground, such as that from which Celery has been lifted, and again about two weeks later, whilst for Scorzonera we make one sowing about the middle of May. The seed is sown thinly in drills, and the seedlings thinned to about one foot apart when they are well through the soil. They are lifted at the end of November and stored in sand.

We are making full use of Brussels Sprouts, depending practically on one variety, Dwarf Gem. For early supplies we sow during the first week in March, under glass, in mild heat, transplanting the seedlings in shallow boxes or direct in a warm, sheltered spot out-of-doors, allowing, in either case, a distance of about three inches each way. When about 6 inches high they are planted finally, at a distance of 30 inches between the plants, in rows made 3 feet asunder. To maintain a succession, another sowing is made in the open, about the second week in April.

Leeks form one of the most important and delicious winter vegetables. The three varieties I prefer are Improved Lyon, Prizetaker, and International, and the seedlings are raised in the same way as are Onions. The seed is sown in gentle warmth in boxes, under glass, early in January; the seedlings are transplanted into other boxes when large enough, and finally planted out, after thoroughly hardening them, about the middle of April, in trenches made about one foot deep by fifteen inches wide. Another sowing is made about the end of March to furnish supplies from the end of December to the spring. Blanching should be commenced about ten days after the plants are in the trenches, and the Leeks should be drawn up to the desired height as this proceeds; there is no better method of blanching than by means of brown paper collars, earthing up as height is attained.

Mushrooms are available all the year round in these gardens, but I omitted to mention this important vegetable in my notes on October vegetables. We make fresh beds about every four weeks, using Cutbush's "Milltrack" Spawn for the purpose, as we have always found this most reliable. More Mushrooms should be grown, as they constitute a valuable food, and are not difficult to raise in a warm cellar. Mushrooms may also be grown in the open, on prepared beds, during certain months of the year.

All the salad vegetables noted last month are still in use and to these should be added Cucumbers—which is another all-the-year-round crop with us—and Tomatoes. I have gathered Tomatoes from no fewer than four successive batches of plants grown in the same house, and where even only a small amount of glass is available every effort should be made to have a continuous supply of Tomatoes. *Edwin Beckett, I.M.H.*

FORCING EARLY GRAPES.

THE early forcing of Grapes has been abandoned in many gardens. Late Grapes, however, are not esteemed in all establishments, and not a few gardeners are still obliged to force Black Hamburg and other thin-skinned varieties as early as ever they did. Late Grapes do good service to the gardener in places where plant houses are none too plentiful, as they enable him to defer forcing until the New Year, with much better prospects of good crops. Pot Vines are not grown so extensively for forcing as their merits deserve, but the majority of growers who require Grapes for the table in May still raise or buy a few pot Vines annually to permit a longer period of rest to the early permanent Vines. Pot Vines, pro-

vided they are ripe and well rooted, yield good crops of fruit, and their successful forcing often depends more upon the preparation of the Vines than upon the detailed operations of forcing. I have seen many very strong Vines prove complete failures, whilst weaker, but thoroughly ripened canes have developed and matured good bunches. Pot Vines with hard, brown rods and plenty of roots may, provided they have had a long rest, be started now with every prospect of success. The pit or house should not be over large, but light and well heated: a span roof admits most light, but such houses require much fire-heat; a good lean-to house facing south is as suitable as any for the early forcing of Vines. The pots should be stood about 20 inches apart and partially surrounded by fermenting material, providing steady warmth; the litter will not only serve to stimulate the roots, it will also keep the house supplied with atmospheric moisture. The Vines, having been shortened to a suitable length some weeks ago, there will be little danger of them bleeding. Lightly top-dress the roots with loam and bone-meal, and make the soil firm by ramming, taking care not to damage the roots when doing this. Tepid water at the roots plays a very important part in the forcing of Grapes, but of two evils it is better to give too little than too much moisture. The temperature of theinery may range from 50° to 53° by night, and as high as 65° by day with sun-heat, when a little air may be admitted to keep the atmosphere sweet. Damp the walls and paths daily with tepid water, but if the buds break evenly and well, the less the rods are syringed, the better. *F. Jordan.*

PROPAGATION OF PRINCE OF WALES PLUM TREES.

MISS CALEY, of the John Innes Horticultural Institution, has been investigating a disease which has caused severe losses amongst trees of Prince of Wales Plum in nurseries and orchards in this country. It is premature to discuss the disease or its life history, but it is of practical importance to nurserymen and fruit-growers to have in front of them the recommendations of Miss Caley when propagating this variety of Plum. The organism which causes the disease is believed to be a wound parasite, and to spread by spores. For two reasons, therefore, it is advisable to propagate the Prince of Wales variety by budding, and not by grafting. In budding, the wound is slight as compared with grafting, and consequently there is less risk of the spores of the disease gaining an entrance into the tree. In addition, the less tissue of the Prince of Wales variety, introduced in the process of propagation, the less likelihood there is of introducing the disease.

In certain cases, where budding may be impracticable, and grafting has to be employed, then the standard stock should be grafted when young, so that there should be little difference in size between stock and scion. Further, when the tree is young a complete callusing over of the join is ensured. As the Prince of Wales Plum is very susceptible to the disease the original stock should be taken up as a standard or half standard before the graft is inserted. By this means there is less risk of the stem becoming infected with the disease from the soil. Care should be taken when either grafting or budding this variety of Plum, to see that the scions, or the shoots from which the buds are obtained, are taken from matured trees rather than from young trees. The shoots chosen for the purpose should be very carefully examined before being used, and if they show any abnormal lenticel development, pustules, or cracks in the bark, or the slightest discolouration in the internal tissue, they should be rejected. At present full details of the nature of the disease are not known, but, as the spores of the fungus produced only on dead or nearly dead wood, it is safe to assume that the progress of the disease might be checked by cutting out and burning all infected and dead wood.

AN IDEAL GARDEN LIBRARY.

THE average modern gardener's library is by no means ideal. Books of all sorts, sizes and shapes are placed on the shelves without proper arrangement or classification. If the library is at all extensive much time is occupied in finding a particular book, and each book has to be examined before the required information is found.

My own garden library is a large one and in daily use. Its sole object is usefulness. The *raison d'être* of every garden library should be usefulness; if not, why take the trouble to buy and keep books at all? The majority of garden-lovers lose at least half the pleasure and benefit they might gain from their books. Personally, I do not buy books for the purpose of letting them remain untouched on the shelves. I buy them to read—to be my constant advisers and friends.

It is some time since I started collecting gardening books, but I soon found that if my library was to be of real use I must have a system of classification. Without this, nothing can be found in half a minute or so—a condition I consider absolutely essential to every serious horticulturist. I gave the matter considerable thought before coming to a decision, and found that three systems were open to me. First, to have a general alphabetical list of every gardening work I possessed in a card-index file, with letters and numbers to indicate in which shelves the books were to be found. Secondly, to discard the index system and classify all my books alphabetically, under the authors' names; and thirdly, to classify each work alphabetically under subjects, these also to be in alphabetical order.

The first system involves considerable labour and will not be adopted for some time yet—probably not until my library numbers a quarter of a million volumes! The second method seemed awkward and unworkable because, while the name of the book wanted may be remembered, the author's name cannot. So the third was the only one left to me, and this, I think, is ideal.

It may be of interest to readers if I give a list of the sections into which I divided my library, especially as the system proved so entirely satisfactory. The following is a list of the sections:—

(1) Alpine, rock and wall garden, including all books dealing with the construction of such gardens and the plants to grow in them.

(2) Botany; in which are books dealing with this science from a horticultural standpoint.

(3) Bulbs; a section which explains itself.

(4) Climbing plants; in which I include works dealing with every sort of climbing subject—hardy or tender.

(5) Fertilisers, manures and soils; another self-explanatory section.

(6) Floral decoration; dealing with cut flowers and how to arrange them.

(7) Flower books; in which I put works on flowers in general, and particular works on individual florists' flowers.

(8) Forestry; a subject in which I have always been keenly interested, and in which I include works on both shrubs and trees, chiefly hardy, however.

(9) Fruit; a section which needs no comment.

(10) Fungi; mostly illustrated books dealing with every kind of edible and poisonous fungus.

(11) Garden books; a section in which the word "Garden" forms part of the title of the work. This section used to be limited to works the first word of whose title was "Garden." But of late I have widened it considerably, so that it now includes such works as Watson's *Heart of a Garden* and Martineau's *Herbaceous Garden*, also that delightful production of Mrs. Earle, *Pot-pourri from a Surrey Garden*.

(12) Herbs; works dealing with herb growing and the uses of herbs, both in ancient and modern times.

(13) Insect Pests.

(14) Literature, History, Garden Lore, etc.

(15) Orchid Growing; containing both old and recent works on these wonderful plants.

(16) Reference Books; containing gardening, dictionaries of all kinds and such works as Cassell's *Popular Gardening* and Thompson's *Gardeners' Assistant*.

(17) Roses; an absolutely indispensable section as the number of volumes is very considerable.

thusiastic stocking of the shop with all sorts of horticultural rarities in print, and then, I fear, would come the weary, soul-destroying waiting for customers who would never come in sufficient numbers to make it a profitable venture. No doubt such a seasoned collector as your correspondent is well aware that there are various



FIG. 124.—MATURE CROP OF THE MARITIME PINE; SECOND YEAR OF TAPPING TO DEATH BEFORE FELLING THE TREES THREE YEARS LATER. (See p. 265.)

(18) Town Gardening; very useful when villa residents call.

(19) Vegetable Garden; a section containing works dealing with allotments, kitchen gardens and vegetable gardens proper.

(20) Wild Garden; works dealing with the subject where Nature is given a more or less free hand.

Some of these sections may, of course, require modification to meet individual needs. For instance, dictionaries and reference books might be put under a section "Dictionaries," instead of as I have them. Again, Garden Lore, History, and Literature might each have sections to themselves instead of being grouped together. Having just purchased a small garden library to add to my own, I am increasing the number of sections beyond the twenty named. In the new library there are large numbers of works on gardening under glass, so a Greenhouse section will be more or less essential. Then again, there are quantities of books on Ferns and Fern growing, some in seven or eight volumes. I shall thus have to arrange a Fern section. It will further be advisable to add a section on Landscape Gardening or Art and Design since there are a number of books on this aspect of horticulture. I am thinking, too, of adding sections dealing with diseases of plants, and foreign gardening.

The final object I have in view is to make my classification so thorough that there is no need to have any shelves containing miscellaneous works. At present I have two, containing works for which no homes have as yet been found elsewhere—these, however, happen to be works I do not very often require.

Classification may be carried too far; I have seen it done. Then it becomes a hindrance instead of a help. I shall take good care, however, that my garden library is never over-classified; if it was it would cease to be ideal as I congratulate myself it now is.—*A Book Collector.*

WANTED: A HORTICULTURAL BOOKSELLER.

THE note in your issue for October 30 last opens up a pleasant vista, conjuring dreams of entrancing and, perhaps, profitable employment; but for how long? I can readily imagine the en-

thusiastic stocking of the shop with all sorts of horticultural rarities in print, and then, I fear, would come the weary, soul-destroying waiting for customers who would never come in sufficient numbers to make it a profitable venture. No doubt such a seasoned collector as your correspondent is well aware that there are various



FIG. 125.—FINAL STAGE OF TAPPING A MARITIME PINE TO DEATH. (See p. 265.)

would draw his attention to a modest advertisement on your issue of November 6, where he will find "bargains" in "Gardening books for winter reading" offered by someone who may be worthy of support. —*A Modest Collector.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The Laurustinus.—For some weeks there has been a remarkable display of Laurustinus here, the bushes, many of which are of very large proportions, being white with bloom. As a rule the Laurustinus does not flower with us till spring, though here and there a spray may be produced from autumn onwards. Its flowering in the present year is therefore phenomenal, and though the season is exceptionally mild, no other shrub has deviated in a similar way from the normal. On the contrary, vegetation is belated, some border plants, for instance, that flower at this season having been cut over unbloomed. The single Dianthus tynninghamensis and Prichard's Favourite Pink are still flowering; Helleborus latifolius is full of flower; while lovely blooms of Princess of Wales Violet are being picked from the open (November 8)—a rare occurrence. *R. P. Brotherston, Tynningham Gardens.*

The History of a Grain of Wheat (see p. 199).—Your remarks on Sir Daniel Hall's lecture were especially interesting to Wheat growers. I do not agree with your suggestion that the limits of land suitable for Wheat growing have nearly been reached, but it is true that there should be an increase in the yield per acre. The present season's returns from the threshing machine proves that where land has not been well cultivated there is a great shortage in the yield. Although the season has been very unfavourable, even to those who cultivate well, owing to the absence of sun in July, the Wheat crop has done fairly well in many instances, purely owing to a higher state of cultivation. With regard to the former criticism as to the acreage being almost exhausted, my experience during the war in endeavouring to persuade farmers to increase their Wheat area proved to me that on most farms a vast additional acreage could be brought into cultivation for successful Wheat growing. In regard to increased production, the foundation is improved cultivation of the land, not by extra deep ploughing, as some would have us believe, in the same manner that deep treaching does in vegetable production. In growing the best quality Wheat for the miller, "strength," by which is meant plenty of gluten, is the desired object. A firm rooting medium is necessary to achieve this, which cannot be obtained by extra deep moving of the soil. By the latter method plenty of straw may develop, but an excess of straw does not give a greater yield of high quality grain. I emphasise this point to warn those who are commencing to grow Wheat. If strict supervision could be maintained over birds, and rooks especially, as it can be when but a few acres are grown, I agree that 2½ bushels of seed per acre are ample; but when hundreds of acres are grown, the difficulty increases, and I am not sure that the sowing of half a bushel of seed per acre is a gain. Too thin a plant is not conducive to a heavy yield, and although drilling the seed commits it at a more regular depth and ensures regularity in the initial growth, I prefer sowing with a broadcast machine, which gives more space and regularity of growth. I am glad to note a favourable reference to the variety Yeoman. I was so impressed with this Wheat last year that I grew 50 acres during the present season, with the result that I had 11 sacks—44 bushels—per acre from one field of 28 acres, which in a season like the present must be considered extra good. This is a favourite Wheat with the miller, and is worth several shillings more per quarter than certain other varieties for flour production. The lodging of Wheat straw is a very important point to consider in the raising of new varieties. The variety Yeoman is less liable to lodge than any other sort that I have grown, the straw is stiffer and does not grow very tall. Very richly manured land is not an advantage so far as the quality of the corn is concerned, rather the reverse. *E. Molyneux.*

SOCIETIES.

BIRMINGHAM CHRYSANTHEMUM AND NATIONAL POTATO.

NOVEMBER 9, 10, 11.—Quite unlike the wet foggy and uncomfortable weather usually associated with the Birmingham Chrysanthemum Show, which was held in conjunction with the National Potato Society's exhibition, the weather on the opening day was warm and summer-like, and the Bingley Hall, in which the combined shows were held, was comfortably warm. Competition in the Chrysanthemum classes was, on the whole, good, but fruit and vegetables and honorary exhibits were below the average.

Potatoes shown in the National Potato Society's section were numerous and good, and notwithstanding the wet, unless season the tubers were pronounced to be superior to those of a year ago.

CHRYSANTHEMUMS (OPEN) GROUPS.

Competition in the class for a group of Japanese, Incurved and Decorative Chrysanthemums was disappointing. Mr. A. CRYER, gardener to J. A. Kenrick, Esq., Berrow Court, Edgbaston, being the only entrant. His display, which occupied 15 feet by 10 feet, included a good selection of specimens of each of the above-named sections.

The last-named exhibitor had no competitor in the classes for (1) six Decorative Chrysanthemums, and (2) three Decorative Chrysanthemums grown in pots not exceeding 6½ inches diameter.

CUT BLOOMS.

The leading class for cut blooms was for Japanese and Incurved varieties arranged on a table 18 feet by 5 feet. Foliage plants were admissible, and the use of any kind of vase or stand was allowed. Last year's winner, Mr. H. WOOLMAN, Shirley, was again successful, and well deserved the award of the silver challenge shield and £10 offered as first prize. His blooms were displayed on 13 big stands fronted with smaller vases and relieved with Bamboos, Ferns and other foliage plants. The following varieties were splendidly shown, viz.: Shirley Golden, General Petain, Mrs. George Monro, Queen Mary, Mrs. Algernon Davis and W. Turner.

Mr. H. WOOLMAN and Mr. A. H. HICKMAN, Cookley, were the exhibitors in the class reserved for single-flowered varieties, occupying a table space of 8 ft. by 4 ft., and the awards went in the order named. The first prize exhibit was noteworthy for a central mass of Mrs. W. J. Godfrey, the charming pink blooms measuring 6 inches across; Lizzie Robertson, rich buttercup yellow; Bronze Molly, Florrie King, Lady Astor and Sweet Auburn.

In a class for three Japanese varieties, three blooms of each, J. H. WHEATLEY, Esq., Berkswell Hall, Coventry (gr. Mr. W. H. Westbury), won the 1st prize with F. S. Vallis, W. Turner and Mrs. J. Gibson. 2nd, Mr. H. WOOLMAN.

In the class for twelve Japanese varieties of one bloom of each, arranged on a table space of 6 feet by 3 feet, J. B. BROOKES, Esq., Finstall Park, Bromsgrove (gr. Mr. E. Avery), was 1st with beautifully fresh blooms of Queen Mary 11 inches across, W. Turner, Lady Talbot, Frank A. Edwards, Mrs. Edgar Tickle, A. F. Tofield and Mrs. Lloyd George. 2nd, Mrs. RICHARD PETTOS, Edgbaston (gr. Mr. W. Young).

There were seven capital entries in the class for one vase of a pink-coloured variety. 1st, Mr. H. WOOLMAN, with huge flowers of Mrs. Algernon Davis. The same variety also gained 2nd prize for J. B. BROOKES, Esq. (gr. Mr. E. Avery).

The best vase of a crimson-coloured Japanese variety was also shown by Mr. H. WOOLMAN, whose three flowers of Mrs. George Monro were wonderfully good, the broad, stout petals being of an intense crimson. 2nd, J. H. WHEATLEY, Esq. J. H. WHEATLEY, Esq., excelled in the class for a white Japanese variety, showing William Turner in extra good style.

bury) excelled in the class for a white Japanese variety, showing William Turner in extra good style.

The winning vase of a yellow Japanese variety was Princess Mary, shown by Mr. H. WOOLMAN. The variety Fred Green, a rich purple, Japanese flower with broad florets, gained first prize for J. H. WHEATLEY, Esq. (gr. Mr. W. H. Westbury), in a class provided for any colour other than those named above.

In a class for four varieties of single Chrysanthemums, eight sprays of each, J. A. KENRICK, Esq. (gr. Mr. A. Cryer), was awarded the first prize with Sylvia Slade, Ceddie Mason, Countess Egmont and Mrs. H. Herbert.

For six varieties of decorative Chrysanthemums, six sprays of each, Mr. A. H. HICKMAN was the only competitor and well merited the first prize for splendid flowers of Market Red, Source d'Or, H. W. Thorp, Uxbridge Pink, Cranfordia (extra good), and Parson's White.

LOCAL CLASSES (OPEN).

These were not strongly contested. In a class for four vases of twelve incurved varieties, three blooms of each, H. F. KEEP, Esq., Edgbaston (gr. Mr. T. W. Davis), excelled with choice specimens of Buttercup, Lady Isobel, Mrs. Percy E. Wiseman, G. F. Evans, Emblème Poitevine and Triomphe de M. Brunn. 2nd, J. A. KENRICK, Esq. (gr. Mr. A. Cryer).

The best pair of incurved varieties, three blooms of each, was also shown by H. F. KEEP, Esq. (gr. Mr. T. W. Davis), who had exquisite blooms of Romance and Clara Wells. 2nd, J. A. KENRICK, Esq. (gr. Mr. A. Cryer).

For four vases of twelve Japanese varieties, Sir GEORGE H. KENDRICK, Whetstone, Edgbaston (gr. Mr. J. V. Macdonald), was an easy first prize winner, with extra large, heavy, well-finished blooms of Princess Mary, Mrs. W. Holden, Mrs. Algernon Davis, Mrs. R. C. Pulling, Edith Cavell, Mrs. Lloyd George, His Majesty, Queen Mary, Mrs. M. Sargent, W. Turner, Thos. Beeson, and General Smith Dorrien. 2nd, J. A. KENRICK, Esq. (gr. Mr. A. Cryer).

The best pair of vases of Japanese varieties, three blooms of each, grown within five miles of the centre of the City of Birmingham, was exhibited by J. H. ODELL, Esq., Handsworth Wood (gr. Mr. A. N. Ford).

DECORATED DINNER TABLES.—There were ten good entries in the class for dinner tables, each 6 feet by 4 feet, decorated with Chrysanthemums. 1st, Sir GEORGE H. KENDRICK (gr. Mr. J. V. Macdonald), whose arrangement of a small crimson decorative variety, relieved with long sprays of bronze-tinted Selaginella and narrow-leaved Crotons, was very beautiful. 2nd, Mr. T. PARRY, Stoke Severn, who relied upon single yellow and apricot-coloured flowers interspersed with trails of intensely coloured Ampelopsis Veitchii and Croton leaves.

SPECIAL PRIZES FOR CHRYSANTHEMUMS.—Messrs. Godfrey and Son offered prizes for twelve vases of single-flowered varieties, three blooms of each, in not fewer than six varieties. Mr. LOO THOMSON, Fomby, who was the only exhibitor, had remarkably good blooms of Sandown Radiance, Bertha Fairs, Mrs. W. J. Godfrey, Aristocrat and Bronze Molly. Mr. H. Woolman offered prizes for (1) three vases of nine Japanese blooms. 1st, Mr. ERNEST P. CLARK, Moseley, who had superb flowers of Queen Mary, W. Turner, General Smith Dorrien, Mrs. Algernon Davis, Edith Cavell, Mrs. M. Sargent and Mrs. R. C. Pulling. (2) Six Japanese blooms exhibited on boards. The only exhibitor was Mr. W. PEARSELL, Winson Green, Birmingham, whose flowers were poor. (3) Three Japanese varieties, three blooms of each. 1st, Sir GEORGE H. KENDRICK (gr. Mr. J. V. Macdonald), with splendid examples of Mrs. W. Holden, Mrs. Algernon Davis (11 inches across), Mrs. R. C. Pulling (extra good), and Mrs. Lloyd George. 2nd, H. F. KEEP, Esq. (gr. Mr. T. W. Davis), who had grand flowers of W. Rigby, Mrs. A. Davis and Princess Mary. 3rd, J. W. MOORE, Esq., King's Norton.

Prizes were offered by Mr. LOO THOMSON for six varieties of single-flowered Chrysanthemums, and the donor, who was the only exhibitor, had the satisfaction of winning his own prize, He

showed very big flowers of Bertha Fairs, W. Parry, W. J. Godfrey and others.

Messrs. W. Wells and Co. offered a prize for the best Japanese bloom in the show (trade excluded), and it was won by H. J. WHEATLEY, Esq. (gr. Mr. W. H. Westbury), with the variety William Turner.

MISCELLANEOUS PLANTS.—Two classes were provided for (1) twelve pots and (2) six pots of Begonia Gloire de Lorraine, and Mrs. RICHARD PEYTON (gr., Mr. W. Young) took the lead in both classes. 2nd, J. A. KENRICK, Esq. (gr., Mr. A. Cryer). The last-named exhibitor had it all his own way in classes for (1) three Palms; (2) one Palm; (3) twelve Cyclamen and (4) one Tree Fern.

For six pots of Scarlet Salvias, J. A. KENRICK, Esq. (gr., Mr. A. Cryer), won first prize with moderately-flowered plants. 2nd, Mrs. RICHARD PEYTON (gr., Mr. W. Young). The last-named exhibitor won Messrs. E. Webb and Sons' prize for six pots of Cyclamen.

FRUIT.

As already stated, fruit was not a strong feature, and the quality generally was below the average. There was only one exhibitor in the principal class for a collection of British-grown fruit on a table 12 feet by 4 feet. HUGH ANDREWS, Esq., Toddington Manor, Winchcombe (gr. Mr. J. R. Tooley), showed forty-seven dishes, which included Grapes, Apples, Pears, Melons, Peaches and Figs.

In the next class, which was reserved for a collection of British-grown hardy fruit displayed on a table of 12 feet by 8 feet, Mr. E. G. HILLS, Hanley Castle, Worcestershire, was the winner. His best dishes were small coloured examples of King of the Pippins and Rhydd Seedling Apples, and Pitmaston Duchess Pears.

HUGH ANDREWS, Esq., won first prize in six classes for three bunches of Black Grapes and for three bunches of Muscat Grapes.

J. A. KENRICK, Esq. (gr. Mr. A. Cryer), had the best pair of bunches of Black Grapes in the class, reserved for local growers; 2nd Mrs. RICHARD PEYTON (gr. Mr. W. Young).

The best half-dozen dishes of distinct culinary Apples were shown by Mr. W. TAYLOR, Shrewsbury, who had choice, even-sized, beautifully coloured examples of Newton Wonder, Mère de Ménage, Tower of Glamis, The Queen, Bramley's Seedling, and Peasegood's Nonsuch. 2nd, W. CORDEUX, Esq., Bunney Hall, Raddington (gr. Mr. W. R. Scott).

Mr. TAYLOR again excelled in the corresponding class for six dishes of Dessert Apples, with beautiful fruits of Rival, Ribston Pippin, King of the Pippins, Allington, Cox's Orange Pippin and Blenheim Pippin. 2nd, HUGH ANDREWS, Esq.

VEGETABLES.

Messrs. Sutton and Sons offered prizes for nine kinds. The first prize was won by HUGH ANDREWS, Esq. (gr. Mr. J. R. Tooley), for a well arranged collection which included splendid samples of Onions, Cauliflowers, Leeks, Brussels Sprouts and Parsnips; 2nd, Mr. E. WINCHESTER, Rubery; 3rd, Mr. WILLIAM PERKS, Lye.

Messrs. Sutton and Sons also offered prizes for several single dishes, in which HUGH ANDREWS, Esq. (gr. Mr. J. R. Tooley), won first prizes for (1) Carrots; (2) Onions; and (3) Cauliflowers. Mr. A. H. HICKMAN excelled with Parsnips, and the Hon. F. T. HALSEY, Gaddesdon Place, Hemel Hempstead (gr. Mr. T. Avery), had the winning exhibit of nine Kidney Potatoes.

Messrs. Edward Webb and Sons offered prizes for six kinds. The last-named exhibitor took the lead with good Celery, Leeks and Ailsa Craig Onions; 2nd, Mr. W. P. ORRILL, Hinckley; 3rd, Mr. E. WINCHESTER, Rubery. Mr. W. P. ORRILL won the same firm's first prize for single dishes of Potatoes and Onions.

Messrs. Dickinson and Robinson's prizes were for nine specimens of Premier Onion. 1st, Mr. W. TAYLOR, Shrewsbury; 2nd, J. B. BROOKS, Esq. (gr. Mr. E. Avery). The Hon. E. T. HALSEY (gr. Mr. T. Avery) excelled in a class for Brussels Sprouts and in another for Prize Pink Celery.

There were two good entries in a competition open to Allotment Societies whose headquarters

are within six miles of the centre of Birmingham. The collection was limited to twelve kinds. The first prize consisted of the Parton Challenge Cup and £5, the last-named being given by Mr. James Randall. The first prize was awarded to the ACOCKS GREEN SOCIETY for splendid Carrots, Turnips, Red Cabbage, Beet, Parsnips and Leeks; 2nd, the SPARKHILL SOCIETY, who had excellent Leeks, Brussels Sprouts and Beet.

POTATO CLASSES.

Of the sixty-four entries in the eight classes reserved for first early varieties (single dishes), first prizes were won by Mr. FRANK WOODFIELD, Purton, Wilts, with May Queen; Mr. H. DAVIS, Stonbridge, with Epicure; Mr. RICHARD CULLAND, Hassall, with Snowdrop; the Hon. F. T. HALSEY (gr. Mr. T. Avery), with Colonist, who also excelled with Duke of York; Mr. GEORGE ASHLEY, Irlam, with Dargill Early; Mr. W. J. GRESSON, Severn Stoke, with Carisbrooke Castle.

SECOND EARLY VARIETIES (OPEN CLASSES).—Single Dishes.—Mr. W. COLEMAN, Buckingham, had the best tubers of Colleen; Mr. W. ROBINSON, Forton, Garstang, led with Eclipse; Mr. D. McPHERSON, Thornton, Fife, had the best dish of Great Scot, and also of Arrian Comrade in another class; Mr. H. CARTWRIGHT, Kidderminster, had the best of 21 dishes of Ally; Mr. GEO. ASHLEY led with King George; Mr. C. HUGHES, Cannock, showed a splendid dish of Edinburgh Castle; and Mr. W. MITCHELL, Selkirk, N.B., was 1st, with Just in Time.

MID-SEASON AND MAINCROP VARIETIES.—Single Dishes.—Competition was keen in most of the above classes, the most successful exhibitors being Mr. W. J. GRESSON, with Prosperity, Abundance and Goldfinder; Mr. A. E. TURNER, Lowestoft, with Factor; Mr. JAMES H. GILMAN, Goudhurst, with Tinwald Perfection; Mr. GEO. ASHLEY, with The Bishop; Mr. J. NAYLOR, with White City. Mr. W. COLEMAN had the winning dishes of Arran Chief and Iron Duke. Mr. D. McPHERSON showed a good dish of Golden Wonder. The OSCOTT COLLEGE, Erdington, beat 41 contestants in the class for Majestic.

COLLECTION OF POTATOES.—Messrs. Randall Bros. and Parsons offered prizes for twelve varieties. Of the seventeen entries, Mr. W. J. GRESSON, Severn Stoke, was placed first with grand dishes of Abundance, Mr. Breese, King Edward VII., The Bishop, Arran Rose and Ally. 2nd, Mr. W. MITCHELL, Selkirk, N.B.

Messrs. Cross and Co. offered prizes for six dishes of immune varieties: 1st, Mr. W. J. GRESSON; 2nd, Mr. W. COLEMAN.

Messrs. Webb and Co's prizes were offered for three immune varieties, and of the 25 exhibits the one that gained the premier award came from the OSCOTT COLLEGE TRUSTEES, whose dishes of Majestic, Kerr's Pink and Great Scot were particularly good.

The following prizes offered by Messrs. Bees were reserved for allotment holders and amateur gardeners. Two hundred and fifty-one entries were made in the six classes, and the under-mentioned contestants were the most successful: Mr. W. ROBERTS, Walsall; Mr. W. P. ORRILL, Hinckley; Mr. J. COWRIE, Selkirk; Mr. A. LOWE, Newport, Salop; and Mr. JOHN WORTH, Liverpool.

HONORARY EXHIBITS.

Large Gold Medals were awarded to Messrs. WATERER, SONS AND CRISP, for Hardy Shrubs; The BOARD OF AGRICULTURE AND FISHERIES for Potatoes; Messrs. SUTTON AND SONS for Potatoes; Messrs. WEBB AND SONS for Potatoes and other vegetables; and Messrs. ALEXANDER AND BROWN for Potatoes.

Small Gold Medals were awarded to Messrs. W. J. GODFREY AND SON for Chrysanthemums; Mr. JOHN L. CLUGAS for Potatoes; PLANT BREEDING INSTITUTE, Cambridge, for Potatoes; Messrs. BEES, LTD., for Potatoes; and Messrs. SIMPSON AND SONS for Potatoes.

Silver Medals were awarded to Messrs. DICKENSON for Potatoes; SOUTH WEST LANCASHIRE FARMERS, Ormskirk, for Potatoes; Messrs. SUMNER, LEVESLEY AND KENNEDY for Potatoes; Messrs. TILLIE, WHYTE AND CO. for Potatoes; Mr. H. N. ELLISON for Ferns; and Mr. E. G. HILLS for Antirrhinums.

ROYAL HORTICULTURAL Scientific Committee.

NOVEMBER 2, 1920.—*Present*: Mr. E. A. Bowles (in the chair), Messrs. J. Fraser, W. Cuthbertson, A. Worsley, F. J. Hambury, C. G. A. Nix, Rev. W. Walks and F. J. Chittenden; Messrs. Bunyard and Crane visitors.

White and Grey Poplars.—Mr. J. Fraser showed specimens to illustrate the differences between these two species, especially referring to *Populus alba* var. *nivea*, recognisable by its small catkins, of which only the female form is known in England, the male occurring in the Channel Islands, and to the thicker and more clumsy branches of *P. canescens*, the catkins of which are long. Both species show parallel variations in the amount of tomentum.

Pear-shaped Sport of Apple.—Mr. Bunyard showed an Apple of the variety Houbion, remarkably like a Pear in shape, similar to sports which have been shown at previous meetings and to the Pear Apple, in which variety, however, the form is constant.

Variation in Leaves of Raspberry.—Mr. Bunyard also showed a piece of Raspberry cane giving rise from a sucker to a flat-leaved, spiny growth, whereas the principal canes were almost smooth and the leaves curved and crinkled. Such canes were generally regarded as seedlings or rogues, and destroyed, but it was not clear whether they were different because one was juvenile, the other aged, or produced at a different season, or whether we have to deal with a chimera.

Variation in Apples.—Mr. Crane showed fruits of Cox's Orange Pippin from different trees to illustrate the remarkable range of variation seen in this fruit. One was very highly coloured, and the other orange, sometimes with red streaks, sometimes without. Both were from orchard house trees.

Apple Blossom Weevil.—Mr. Chittenden showed, on behalf of Mr. G. Fox Wilson, a photograph of some Apple blossom weevils on an Apple branch to illustrate the efficient manner in which their colouring hides them.

Obituary.

Odoardo Beccari.—Intelligence of the death, at Florence, on October 25, of Dr. Odoardo Beccari, Director of the Botanic Garden, Florence, and an accomplished botanist and traveller, has been received. Dr. Beccari was little known personally in England, but he visited London in the early 'sixties, making a stay of some months when preparing for his future travels in New Guinea and the Malay Archipelago. He was the first foreign botanist with whom I became somewhat intimate, and he was at that date full of vigour and enthusiasm. Thirty years later he visited Kew again, still busy with his very rich collections, especially Palms, of which he published an elaborate monograph of the genus *Calamus*. His first publication was a quarto, entitled *Malesia*, which extended into several volumes, spread over a long period. These volumes contain descriptions and illustrations of a large number of curious Asiatic types, chiefly of flowering plants. Among them is an account of the singular *Corsieae*, which presents some extraordinary types of floral structure; this is generally regarded as a tribe of Burmanniaceae. His chief monograph of the *Lepidocaryae* (Rattans or Rotangs) appeared in the *Annals of the Botanic Garden of Calcutta*, Vols. XI. and XII., a review of which appeared in *Gard. Chron.*, 1903, II., p. 86. 1912, I., p. 273, in which many interesting facts are recorded. Dr. Beccari's treatment of the tropical African genus *Hyphaene* was an entirely new departure. Previously it was supposed that there was only one *Doum Palm*, but he described about a dozen new species, and expressed the opinion that there were certainly over 50 species in Africa. Among other distinctions Dr. Beccari was elected a foreign member of the Linnean Society in 1883, and was, therefore, the father of the foreign members. W. Botting Hemsley.

William Dick.—Mr. William Dick, late superintendent of the Phoenix Park, Dublin, died recently at Belsito Lodge, Inchicore, Dublin, in his 91st year.

Thomas Lunt.—Mr. Thomas Lunt, who was head gardener at Ardgowan, Renfrewshire, for 57 years, had been in retirement since March, 1910, although retaining the house he occupied since it was built for him 67 years ago. In this house he died, on November 14, in his 92nd year. A native of Liverpool, Mr. Thomas Lunt was born on December 31, 1828, and took up gardening as a career at an early age. After serving his apprenticeship and gaining experience in one or two establishments he went to Eaton Hall gardens, Chester, under the late Mr. John Collinson, where he remained some six or seven years and became foreman. While at Eaton Hall he came under the notice of Lady Octavia Grosvenor, and when her ladyship came to Ardgowan as the bride of the late Sir Michael Shaw-Stewart, Bart., she brought Mr. Lunt there as head gardener on March 8, 1853. Mr. Lunt was a splendid gardener, and he excelled in the culture of Grapes, Peaches, Nectarines and all fruits under glass. He was also very successful with stove and greenhouse plants, which were features in the houses at Ardgowan. The gardens—and, indeed, the whole of the policies—were an object lesson to all horticulturists privileged to see them. He had a kindly nature and a most courteous and dignified bearing. Master of his craft, he trained his assistants admirably, and many of his men owe their position in life to-day to the rigid training and high standard set by him. The Council of the Royal Caledonian Horticultural Society bestowed the Neill Prize for Horticulture on Mr. Lunt in 1898. Mrs. Lunt long predeceased her husband, but five of their family survive. The elder son, Mr. T. Lunt, is head gardener at Keir, Perthshire, and has won many trophies for Grapes and Chrysanthemums. The second son, Mr. John Collinson Lunt, was until recently head gardener to the Duke of Buccleuch, Bowhill, Selkirk, but is now in business on his own account. Mr. Thomas Lunt was buried in the old churchyard in the quiet little village of Inverkip, on a sunny November day. The beautifully simple service was held in the open air, and was attended by, among others, Sir Hugh Shaw-Stewart, who acted as one of the pall bearers. Lady Octavia Shaw-Stewart sent a floral tribute, accompanied by a letter of sympathy to the relatives. Thomas Lunt was a gardener all his long life, and he was buried by men who belonged to the profession he adorned. *D. G. P.*

TRADE NOTES.

At the important sale of Tomato and Cucumber-growing nurseries, conducted recently by Messrs. Protheroe and Morris, Cheapside, the Park Lane Nursery, Waltham Cross, was sold for £23,000. This nursery has an area of 26 acres, including about 8½ acres of glass. The other lots in this sale were withdrawn.

A CONFERENCE was held at the offices of the Chamber of Horticulture on Wednesday, November 10, when the following bodies were represented:—Chamber of Horticulture, National Farmers' Union, Federation of British Growers, Horticultural Trades' Association, British Florists' Federation, Home Counties Market Growers' Association (West Sussex Branch). The object of the meeting was to select six persons to be recommended to the Ministry of Agriculture to represent various branches of horticulture on the new Council of Agriculture, which was being set up by the Ministry under the Ministry of Agriculture and Fisheries Act of 1919. The Secretary of the Chamber read a letter from the Controller of Horticulture, requesting that the selection be made and suggesting the lines on which this should be done.

The nominations made were as follow:—To represent nurserymen and seedsmen, Mr. G. W. Leak; glasshouse growers, Mr. Joseph Rochford; fruit growers, Mr. Percy Manwaring and Mr. E. B. Champenowne; vegetable growers, Mr. Ed. W. Lobjoit and Mr. Alfred Poupart.

THE AGRICULTURE BILL.

THE chief amendments placed upon the Order Paper in the House of Commons on behalf of the Land Union would alter the provisions of the Bill in the following manner:—

- (1) To take from the jurisdiction of Agricultural Committees the power to compel farmers, under a heavy penalty, to cultivate as the Committee directs, paying no compensation if the cultivations ordered meet with failure.
- (2) To prevent the Agricultural Committees ordering the erection of buildings at the expense of the owner of the land where such buildings are unnecessary.
- (3) To provide that owners of land, including those farmers who have purchased their holdings, shall be free to resume possession for themselves or members of their families of any land which they may have temporarily let.
- (4) To retain the right to compensation already possessed by farmers who have suffered loss by ploughing up land under orders issued on the Authority of the Defence of the Realm Act. The Agriculture Bill proposes to take away this right which Parliament has already granted in the Corn Production Acts 1917-18.
- (5) To secure that in all questions arising between landlord and tenant as to the necessity of improvements or repairs, either party shall have the right to call for an independent arbitration by a practical agricultural surveyor.

ANSWERS TO CORRESPONDENTS.

CHRYSANTHEMUMS SHOWING REVERSE COLOURING. *E. S. R. C.* With regard to the Chrysanthemums showing a large amount of the under surface of the florets, we can only suggest that the buds were taken too early, consequently, the blooms are coarse, and florets show their reverse side. The approximate time of securing buds of the varieties mentioned would be August 15 to 20, and Mrs. K. Luxford about August 20. Another possible cause of wrong colouring is feeding the plants too freely with nitrate.

Erratum.—Owing to a mischance, due to a transposition of the articles on p. 241, the note on *Crocus hadriaticus* by Mr. W. R. Dykes was attributed to Mr. S. Arnott.

HYBRID ORCHIDS: *H. E.* Cattleya aurea × L. C. Neleus is named Laelio-Cattleya Maudiae; aurea × O'Brieniana alba is C. Etheldreda; G. Woodhams × Thynne is Laelio-Cattleya Breburne; G. Woodhams × Fabia is L. C. Favonius; Iris × Adula is Cattleya Clive; Iris × G. Woodhams is L. C. Armstrongiae; labiata × O'Brieniana alba is C. Mont Blanc; Brasso-Cattleya Mrs. Leeman × C. Iridescens is B. C. Sofrana. Of Maron's B. C. Dunkerkii, the parentage is not recorded. The other hybrids suggested have not been recorded so far as we have any information.

NAMES OF PLANTS: *E. W. F.* 1, *Cypripedium Clavii* (Spicerianum × vernixium); 2, *C. Pavonium* (Boxallii × venustum); 3, *C. Crossianum* (venustum × insigne); 4, *C. Ashburtoniae* (barbatum × insigne); 5, *C. Cyris* (Boxallii × Argus); 6, *Petri* (Dayanum × virens); 7, *C. Lathamianum* (Spicerianum × villosum).—*L. R. A.* Tecoma jasminoides, native of Australia.—*E. N. C.* Amelanchier vulgaris. *T. O. C.* 1, *Eupatorium Weinmannianum*; 2, *Cassia corymbosa*.—*E. S.* 1, *Zenobia speciosa*; 2, *Pieris japonica*; 3, *Kalmia latifolia*; 4, *Ledum palustre*; 5, *Kalmia angustifolia* var. *rubra*; 6, *Tecoma grandiflora*; 7, *Garrya elliptica*.—*J. G. B.* So far as we are able to judge from your description, the Lily is *Lilium chalcidonicum*, the scarlet Martagon Lily of Greece, which is a very old inhabitant of our gardens.—*T. A. V.* 1, *Cotoneaster frigida*; 2, *Euonymus europaeus*;

3, *Muehlenbeckia complexa*.—*Correspondent.* (No letter, labels detached). 1, *Spiraea Bumalda* Anthony Waterer; 2, *Leycesteria formosa*; scarlet berry, *Cotoneaster Simonsii*; dull red berry, *Pernettya mucronata*; variegated shrub, *Euonymus japonicus*, golden form.

NEW CHRYSANTHEMUM: *W. C. B.* We quite agree that your new variety has flowers of a delightful golden-apricot colour and that it should be very useful for decorative purposes. The naming of the variety is a personal matter. If you wish to distribute your new Chrysanthemum you should invite some of the specialists to inspect it while in full bloom, after sending them a few flowers to show its style and colour.

PROPAGATING HOLLIES: *P. D.* The Holly is usually propagated from seeds, which takes two years, as a rule, to germinate. It may also be increased by cuttings, but the latter are of slower growth than seedling plants. October is the best time to insert cuttings, but they may be inserted now in a cold frame, where they can be protected from very severe weather. They take from six months to twelve months to root. Young Hollies, both seedlings and cuttings, require frequent transplanting to ensure successful removal. Whether the growing of young Hollies would be a paying side-line for you to take up is a matter for you to decide.

ROOT-GRAFTING OF CLEMATIS AND DOUBLE GYPSOPHILA: *T. B.* The principles of root-grafting are the same as those which apply to stem-grafting, the only difference being that a portion of root is used as a stock instead of a young plant. The roots of the Clematis stock (*C. vitalba*) should be obtained at once—the thickness of each is immaterial—cut into lengths of two inches to three inches, tied in bundles, and buried in the ground until required. Care should be taken to cut the two ends of the roots in a different manner, so that the upper end may be readily distinguished. The scions are obtained by cutting back plants of the variety required to within two or three buds of the base. This should be done about the end of December, and the plants placed in heat to encourage growth. By the end of January or the middle of February the new shoots made should be three feet to four feet in length. They should then be stopped and allowed to remain for about a fortnight, when the scions should be ready for grafting. The roots do not require any further treatment before being grafted. When grafting, a thin slice is taken off the side of the root, and a corresponding piece off the side of the scion. The two are then bound tightly together, potted in small pots, and placed in a close propagating-case. Union takes place within a fortnight. The scions are simply a portion of the stem containing a bud, and need be only about an inch in length. As the buds of the Clematis are opposite, it follows that each scion has two buds, and can be cut down the centre to form two scions. This is often done in cases where stock is limited. In the root-grafting of double Gypsophila the procedure is practically the same, except that the plants, after being grafted, are usually placed in boxes of sandy soil instead of being potted. This, however, is only a matter of saving time and space.

VIOLETS DISEASED: *A. C.* The plants are attacked by spot disease, caused by the fungus *Ascochyta violae*. The disease was very prevalent a few years ago, but apparently it has not been so virulent lately. It is very important that you destroy all badly affected plants, and spray the others at fortnightly intervals with potassium sulphide at the strength of 1 oz. of potassium sulphide to 3 gallons of water.

Communications Received.—*E. J. S.*—A. W. M.—A. E. S.—E. B. C.—E. A.—Bookworm—T. S.—H. E. K.—Dudley—J. W. M.—J. C. S.—G. C.—A. H. C.—W. R. A.—R. K.—A. D. T.—D. R.

THE

Gardeners' Chronicle

No. 1771.—SATURDAY, DEC. 4, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.7°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday December 1, 10 a.m.: Bar. 30.2, temp. 50°. Weather—Fine.

New Zealand Plants and their Story.

The story which Dr. Cockayne has to tell is wonderful and the manner of his telling it is full of charm. He gives us no bare catalogue of plants, nor bald descriptions, but shows by pen and picture the wonderful vegetation of those happy islands. There, on the bare rock growing side by side, are the "Tree Daisy," *Olearia insignis*, and *Veronica Hulleana*, two of the many New Zealand plants which have long ago been welcomed to and made much of in our gardens. Though New Zealand may boast of no native Roses, it grows the finest Buttercups on earth and none who has seen the Mountain Lily—*Ranunculus Lyallii*—will deny it the honour of being the queen of that genus. From its thick root stock it raises, on strong stalks, great leaves with saucer-like blades 9 inches in diameter, and over acres of mountain land its white flowers form one of the most beautiful sights imaginable. In company with it are the no less beautiful *Ourisia macrocarpa* and *Celmisia*. Of the latter genus New Zealand possesses practically a monopoly—only one species occurring elsewhere. Some of these are showy plants with sword-like leaves—*Celmisia Armstrongii* and *C. lanceolata*; others form silvery cushions (*C. sessiliflora* and *C. argentea*), and others are matted plants. In the same plant association, the "herb field" of sub-alpine nature, is to be found the so-called alpine Foxglove, *Ourisia macrophylla*, and another fine Buttercup, *Ranunculus nivicola*. In not very dissimilar situations the shrubby *Veronicas*

occur, among which is *Veronica cupressoides* which—as its specific name implies—looks, when out of flower, not like a flowering plant at all, but exactly like a Cypress. *Veronica buxifolia* var. *odora*, a shining green bush, is round as a cricket ball. *Veronica Traversii* is so well known to British gardeners as to need no description. Of the Tree Daisies, which also form conspicuous elements of the sub-alpine scrub, the most noteworthy are the New Zealand Holly (*Olearia ilicifolia*), the prickly leaves of which are musk scented; *O. macrodonta*, which is prized by those who grow it; and the large leaved *O. Colensoi*, named after the Rev. William Colenso, one of the most indefatigable of the explorers of New Zealand plants, whose zeal may be judged from the delightful description given by Dr. Cockayne of the way he brought home the Alpine treasures from his journey over the Ruahine Mountains—"How was I to carry off specimens of those precious prizes (*Drapetes*, *Ourisia*, etc.)? I had no time to lose. I first pulled off my jacket, and made a bag of that, and then, driven by necessity, I added thereto my shirt. . . . whilst some specimens I also stowed in the crown of my hat." The genus *Colensoa* is too small a memorial for so zealous a collector! It is a remarkable fact, and as inexplicable as remarkable, that, despite the wealth of plants which the New Zealand Alps have given us, the majority of the Alpine plants has white or yellow flowers—as Dr. Cockayne almost pathetically observes, even the New Zealand Forget-me-not, *Myosotis australis*, is yellow. Yellow also is the beautiful Snow Groundsel, *Senecio scorzonoides*, though it ranges through shades of yellow to cream. In the days when facile explanations were the vogue, the variety of colour in these Alpine flowers was ascribed to the supposed paucity of pollinating insects. Even admitted their rarity, it is not evident why colour should be lacking, but since it is now known that insects abound in the New Zealand Alps, the explanation must be sought elsewhere. Perhaps New Zealand insects have an ill-developed colour sense, and it would certainly be worth while investigating their behaviour to colours of various kinds. Although it is but natural that we should find interest from Dr. Cockayne's delightful pages on the habitats, characters, and companions of the New Zealand plants of our own gardens, in learning that the "Immortelle" flourishes in Sphagnum bogs as well as in low-lying meadows and upland pastures, or that the buff-felted leaves of the fine shrubby Groundsel, *Senecio rotundifolius*, which serve admirably as postcards may be plucked and posted at the most southerly post office in Australasia—in the Isle of Ulvi in Patterson Inlet—or that in the outward sub-Antarctic islands among the flowers which produce such a resplendent display of colour—for there the white and yellow rule of the mainland does not hold—abounds the most beautiful plant in the New Zealand flora, *Myosotis capitata*, with ultramarine flowers; or that the beautiful purple flowered *Olearia*, *O. semidentata*, occurs in Sphagnum bogs in the Chatham Islands; yet there are many other aspects of the New Zealand flora which arrest and deserve attention. Nowhere else in the world is plant life so plastic, so protean, as in these islands. Large numbers of New Zealand plants deserve to be planted about the statue of Peter Pan, for they, too, "never grow up," but remain for long years, and sometimes always, in a juvenile form. In this state they may present appearances so dissimilar from those of the adult plant as to deserve place—were the filiation not known—

in another species. Something like one-eighth of the total number of species of seed plants (200 out of 1,620) exhibit marked difference of form between juvenile and adult plant, and in one half of the number (100 species), the growth-forms of juvenile and adult are quite different. In extreme cases of this dimorphism the juvenile form remains juvenile for many years, and actually bears flowers and fruits. For example, *Pennantia corymbosa* is for many years a divaricating shrub—then, finally, it forms a tree. The Mountain Wine-berry, *Aristotelia fruticosa*, which in its youth puts forth leaves of any shape except that of the adult, is when quite grown, an almost leafless plant, with rigid spinous stems. The significance of the dimorphism is revealed here, for the youthful form is dependent on a fair supply of water, whilst the adult is capable of withstanding severe drought. This fact and another—namely that the dimorphism between youth and age is a peculiarity extremely common in genera endemic to New Zealand—suggest that the dimorphism came about as the result of two factors; the one a change of climate—i.e., of water supply—the other isolation. The plants of New Zealand had it all to themselves. Invaders, until 100 years ago, were few and far between, and hence with a changing climate native plants had time—not being hustled by competitors equipped from the outset to occupy new stations—to change their habits with their habitats, and this change is still reflected in the form assumed in youth and age. How severe has been the isolation of New Zealand is indicated by the extremely high proportion of endemic plants which it possesses. Of forest associations, the endemic plants constitute 90 per cent. of the species, and even this figure is exceeded by that of Alpine species, of which 94 per cent. are found in no other part of the world. To deal, however, with the history of the New Zealand flora would require an article to itself; suffice it to say that Dr. Cockayne traces with capable, but cautious, hand the origins of the plants of New Zealand, and, what is no less important, holds out good hopes that the recent invaders—the vegetable camp followers and plant companions of civilisation—will not succeed in ousting the native born plants. Here and there an introduced plant becomes a weed, in many places grazing animals may destroy the native vegetation, husbandry may bring about the destruction of some forest lands, but, unless man intervenes with a more ruthless destruction than has yet taken place, the New Zealand plants will maintain themselves. May it be said so, for there are none more interesting to be found in the face of the earth.

Our Almanac.—We shall publish in an early issue of the New Year a "Gardeners' Chronicle" Almanac for the year 1921. In order to make it as useful as possible for reference, we shall be obliged if secretaries of Horticultural, Botanical and Allied Societies, or any of our correspondents, will send us IMMEDIATE INFORMATION of all fixtures for the coming year.

Coloured Plate.—With the present issue we publish a coloured supplementary illustration of the Perpetual-flowering Carnation Gorgeous. This variety was raised by Mr. Peter Fisher, of Ellis, near Boston, Massachusetts, the same raiser who sent out such fine sorts as Enchantress, Beacon, and Benora. The colour is scarlet-cerise; the habit of the plant, the size and form of flower and calyx are all good, but it lacks fragrance. This variety received the R.H.S. Award of Merit on November 4, 1913, when exhibited by Messrs. Stuart Low and Co., also the Award of Merit of the British Carnation Society on December 3 of the same year, when it gained no fewer than 82 points. For a long time

*New Zealand Plants and their Story, 2nd edition, rewritten and enlarged, by L. Cockayne, F.R.S., illustrated with 99 photographs and 14 text figures, 1919, obtainable from the Director, Dominion Museum, Wellington, N.Z. Prices: Full cloth, 7/6, paper 5/-.

this richly-coloured Carnation was prominent in collections at exhibitions, and at the British Carnation Society's show on December 2, 1914, it was one of three varieties of American novelties staged by Mr. C. Engelmann, which won the American Carnation Society's Cup.

The late Mr. Reginald Farrer's Narrative.—With the present issue we publish another of the late Mr. Reginald Farrer's engrossingly interesting articles on his plant-collecting expedition in the Upper Burma region on the confines of China. Mr. E. Cox, who was with Mr. Farrer in the Salween Divide last year, is doubtful if his latest collections will be saved, as he thinks the native assistants would not have the necessary interest or means of despatching his material home. In any case, we are glad to be able to state that his latest work will be duly recorded, for, just before the news of his death reached us, we received by post a bulky package containing numerous pages of closely-written manuscript, and we have reason to believe that others are on the way. Thus we shall be in a position to continue his narrative, giving further details of his findings almost to the time of his lamented death.

Beautifying Folkestone Front.—The corporation of Folkestone has devoted a sum of £12,000 to beautifying the stretch of cliff lying below the famous Lees at Folkestone and with its base abutting on to the Lower Sandgate Road, which was presented to the town by the Earl of Radnor in 1913. The exigencies of the war prevented the corporation from improving the site up to the present, but they have now commissioned Messrs. Pulham and Son, the well-known landscape gardeners, to carry out the work. At present, as with most cliffs of this nature, the natural vegetation is very uninteresting and it is proposed to replace the numerous Elders, Privets, Ashes and similar trees and shrubs with others of a more ornamental nature. For approximately a mile the undergrowth will be mostly cleared away, although the more beautiful natural features, including a large number of Pines, will be retained. As the cliff stretches some 134 ft. above sea-level and has a southern aspect, it offers splendid opportunities for conversion into a pleasure, and provision will be made for winding paths, giving access to the Lees at various points from the lower road. The work is now in progress, and will help to provide employment for many who would otherwise go to swell the ranks of the unemployed during the coming winter. So far as possible local labour will be used on the work. Many of the East Coast towns have utilised their cliffs to great advantage by converting them into what may be described as coastal gardens, and where the subjects for planting have been judiciously selected, such places are amongst the chief attraction of seaside resorts in both summer and winter.

Village Clubs.—An important conference for furthering the movement for the brightening and improvement of rural life by the provision of centres for recreation and instruction, was held recently under the auspices of the Village Clubs Association in London. The chair was taken by the Earl of Shaftesbury, K.G., who remarked that in the past the townsfolk had been the spoilt children of social reformers, and it was now essential to bring the country into line and to give the rural population similar advantages. The first paper, entitled "The Village Club Movement and its Significance," was read by Sir Henry Rew, K.C.B., who said that if the village depended upon agriculture it was equally true that agriculture depended upon the village. He thought that the movement ought to have been financed from the outset by those who desired to see British agriculture prosper and country life made more attractive. The next paper, entitled "The Intellectual Demands of the Villagers," by Mr. A. W. Ashby (Institute for Research in Agricultural Economics, Oxford), dealt with the migration of villagers to the towns. He stated that the agriculture of a settled country never expands rapidly enough to absorb the natural increase in the agricultural population, and that although improvements in conditions should lead

to our agriculture absorbing the whole of the coming generation, the current of migration must start again later, and be stronger than before. The third paper, entitled "The Recreational Demands of the Villagers," was read by Major David Davies, M.P., who stated that higher wages, and even a direct interest in the produce of the soil might not be sufficient to attract and keep permanently on the land a strong and virile population. The last paper, entitled "The Organisation of the Village Community," was read by Mr. J. Nugent Harris (chief organiser of the V.C.A.), who stated that it was desired to keep an honest, enterprising, educated and industrious class of people on the land, and that therefore those who lived there must be contented with their community life. The Village Club movement would help materially in this respect by bringing the people together and helping them to realise that their interests are identical. Examples of the good results following the formation of a club on V.C.A. lines in various villages in different counties were given.

Lee Valley Growers' Association.—The sixth annual dinner of the Lee Valley and District Nurserymen's and Growers' Association was held in the Cambridge Room, Great Eastern Hotel, Liverpool Street, on Monday, November 29, under the chairmanship of H. O. Larsen, Esq., J.P. A numerous and representative company



THE LATE THOMAS LUNT,
WHOSE DEATH WAS RECORDED IN THE ISSUE
OF NOV. 27.

attended and enjoyed an exceptionally pleasant entertainment. The chief toast of the evening, "Success to the Experimental and Research Station," was proposed by Mr. W. G. Lobjoit, Controller of Horticulture, Ministry of Agriculture, who paid a well deserved tribute to the foresight and enterprise displayed by the growers in the Lee Valley in introducing improved methods of packing and grading of vegetable produce, thereby setting an example to all sections of the horticultural community. In replying to the toast, Dr. Russell, F.R.S., Director of the Rothamsted Experiment Station, and a member of the Research Committee of the Lee Valley Station, spoke of the importance of early diagnosis of plant diseases, pointing out that what are called the symptoms of disease are the plants' ways of telling the grower not only that something is the matter with them, but what—if we could only understand the plants' language—actually is the matter. He could hold out no hope that Experiment Stations would be able to banish plant diseases, but was confident that they would be more and more able as time and research went on to prevent them. Mr. C. H. Shoults, who represented the many growers who have actively interested themselves in the Station, also replied and appealed to all growers to lend their active support to the Experiment Station. The Chairman, Mr. Larsen, referred to the valuable work which the Station was doing and

also to the form of protection which everyone—whatever his politics—would agree was due to the grower, namely, that foreign produce should not be permitted to be sold as English grown. The progress of the Lee Valley Experiment Station must be a source of gratification to all horticulturists, and it requires but little imagination to see that in a few years time its importance will become even greater than it is at present. We are confident that the fullest possible measure of support will be forthcoming from the growers; and if so, their Station, the usefulness of which has been already amply proved, should become not only of the greatest use to the growers themselves, but a model of the co-operative method of combating plant diseases and increasing profitable production.

Association of Economic Biologists.—A general meeting of this association will be held at 2.30 p.m. on Friday, December 10, in the Botanical Theatre of the Imperial College of Science, South Kensington, London, S.W.7. The programme will include an exhibition of specimens and short communications, a lecture on "Problems of Economic Biology in British East Africa," by Mr. W. J. Dowson, late botanist to the British East Africa Protectorate, and a paper on "Nitrogen Fixation in the Ericaceae," by Dr. M. C. Rayner.

Appointments for the Ensuing Week.—Monday, December 6, Smithfield Club Show, Agricultural Hall Islington, five days. Tuesday, December 7, Scottish Horticultural Association meet. Wednesday, December 8, East Anglian Horticultural Club meeting. Friday, December 10, Association of Economic Biologists, meeting to be held in the Botanical Theatre of the Imperial College of Science, South Kensington, at 2.50 p.m.

The late Mr. Joseph Charlesworth.—The late Mr. J. Charlesworth, principal of Messrs. J. Charlesworth and Co., Orchid growers, of Haywards Heath, who died on August 2, in his 70th year, left property to the value of £42,621, of which £26,278 is net personally. Mr. J. Charlesworth bequeathed £1,000 to his manager, Mr. H. H. Smith, together with a sum not exceeding £1,000 for his assistance in winding up his affairs. We understand that Mr. H. H. Smith will continue to manage the Orchid Nursery at Haywards Heath.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Anemone japonica*. How anyone, calling himself a botanist, could have fancied this plant to be an *Atragene* passes our skill to explain. Yet such has been the case, as it stands as an *Atragene* in the writings of Thunberg, a Swedish botanist, who once possessed some reputation. De Candolle might well hint that it was probably an *Anemone*, as indeed was tolerably apparent from the description of it. It is not only an *Anemone*, but a most beautiful one, not inferior to the Chinese *Chrysanthemum*, or even the *Anemone coronaria* of the East. For its introduction to this country the public is indebted to the Horticultural Society, which received it from Mr. Fortune, in 1844. That indefatigable collector had met with it at Shanghai, the Japanese port of China. It has flowered this autumn in great beauty in the garden of the Society, in a greenhouse, its flowering stems being nearly two feet high. It may, however, be expected to be better suited to the open border, at least during summer, and it is probable that it will not suffer even from the cold of winter. According to Siebold, it inhabits damp woods, on the edges of rivulets, on the mountain called Kifune, near the city of Miako, in Japan. The same author tells us that it is much cultivated by the Japanese, for the sake of its beautiful purple blossoms. Many find it to prefer a moist loamy soil. It is usually propagated in Japan by offsets, for its seeds rarely ripen. M. Siebold adds, that it grows at considerable elevations on the mountains of the centre of Japan, whence he infers that it will bear even a Continental winter.—*Botanical Register, Gard. Chron.*, December 6, 1845.

Publication Received. *A Critical Revision of the Genus Eucalyptus*. By J. H. Maiden, Vol. V., Part 2. Sydney: William Applegate Gullick, price 2s. 6d.

THE FORCING OF EARLY VEGETABLES.

WHERE a continuous supply of choice vegetables has to be maintained preparations should be made for the early forcing of several different kinds, as it is from this time onward that the scarcity of choice vegetables is most felt.

Peas are one of the first crops to prepare for if they are wanted from the middle of May onwards, and I have found houses where no fire-heat is used very suitable for raising crops of not only the round-seeded varieties, but several of the best marrowfat sorts. The seeds may either be sown in borders or in boxes; if the latter are used they should be three feet long by ten inches deep, and eight inches wide; use plenty of crocks for drainage and place a layer of thoroughly decayed manure over them. The compost should consist of loam three parts, old Mushroom-bed manure one part, with a good sprinkling of wood ash and rough grit. Make the soil firm and sow the seeds two inches deep. If shelves are available place the boxes thereon as soon as the seedlings appear, and let them remain there until stakes are necessary. Water the plants with care and syringe them on very bright mornings. As the boxes fill with roots they may be fed with drainings from cowsheds, a sprinkling of superphosphate, or a reliable vegetable manure.

After the flowers have set take out the points of the plants as this will assist the pods to swell. Should their room in the houses be required the boxes may be plunged out-of-doors on a south border early in April, after thoroughly hardening the plants. This treatment should be followed in the case of Peas grown in borders with, perhaps, a little less feeding at the roots, until the blooms have set. I have had excellent results from the following varieties:—Pilot, Pioneer, Early Giant, World's Record, Duke of Albany, Stonebridge Marrow, and Harvestman.

Hot-beds may also be prepared for sowing Peas in frames during the present month, placing one foot of rich soil over the hot-bed, eighteen inches from the glass, and sowing seeds of such varieties as Eightweeks, Little Marvel, and Langley Gem, eighteen inches apart, in rows. Sow the seeds fairly thickly at this early date and thin the seedlings to four inches apart when they are well established.

Asparagus may be forced now, choosing crowns not less than three years old. Make a mild hot-bed and in the frame place two inches of fine soil. Plant the crowns closely together, and lightly cover them with similar material; settle the plants in with tepid water, and, when growth commences, add a further four inches of soil. Keep the frame moist, but not saturated and admit a little ventilation early on bright days, closing the lights again at noon to husband the sun-heat. Batches placed in frames every twelve or fourteen days will provide a continuous supply.

Seakale has, by this date, become defoliated, and the roots may be lifted, trimming off all thongs and placing the crowns in the forcing house. Set them two inches apart in beds, boxes, or pots, according to the demand. Fill the space between the roots with fine soil or sand up to the collar, settle them with tepid water, and keep their surroundings quite dark. Batches may be forced every eight days to maintain a continual supply. Later batches may be forced in their growing quarters by placing pots or soil over the crowns and covering them with a thick layer of hot-bed material.

Rhubarb will be in great demand this winter, owing to the scarcity of Apples, and, where supplies are required early in the new year, roots which have been lifted and exposed to the recent frosts should be placed in warmth. Fill between the roots with soil, and give one good watering. Keep the surroundings quite dark, and syringe the crowns occasionally if they are near hot-water pipes. Fresh batches may be placed in warmth about every ten days. Later batches may be treated in the manner advised for Seakale, by placing pots or boxes over the crowns and covering them to a good depth with hot-bed material.

Towards the end of this month make preparations for the early forcing of Potatoes. Mix

three parts of fresh leaves to one of stable manure, and, when ready, place and tread these materials firmly in the pit. Cover the bed with a layer, one foot deep, of rich, friable soil, consisting of loam, old potting soil, wood ash, and old Mushroom-bed manure. The surface of the soil should be about fifteen inches from the glass. Choose well-sprouted sets, and plant in rows made eighteen inches asunder and nine inches apart in the rows, such varieties as Sharpe's Victor, May Queen, or Kingleader. If a succession of tubers is required until the outdoor crop is available, make fresh plantings about every eighteen days.

Carrots may also be forced in frames. Make a hot-bed similar to that recommended for Potatoes, place nine inches of rich soil over the bed, sow the seeds broadcast, and cover lightly with fine soil. Inimitable Forcing, Early Gem, and Early Scarlet Horn are reliable varieties for forcing.

French Beans should be sown in 8 inch pots about every ten days, and placed in a house or pit having a temperature of 60°. Be sparing with water until the plants are well advanced, but syringe between the pots to keep down red spider. I do not recommend half filling the pots with soil at sowing time and

courage free root development, and be very careful in watering them.

Califlowers which were sown in September and now growing in frames or small pots should be given careful attention. Do not allow the roots to become very dry, and keep the soil well stirred and free from weeds. Protect the plants from heavy rains and strong winds by placing the lights over them at such times. Guard, also, against injury by severe frosts, but remove the lights entirely on all favourable occasions. This sowing with us always provides the best heads; if such a sowing was not made, sow seeds at once in warmth and prick the seedlings into boxes and gradually harden them. First Crop, Early Snowball, Magnum Bonum, and White Queen are reliable varieties for the purpose. *H. E. Kemp.*

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA CYRUS.

FLOWERS of a showy new cross between *Cattleya Maggie Raphael* alba, and *Laelio-Cattleya Cowanii* (C. Mossiae × L. cinnabrosa) are sent



FIG. 126.—A COLONY OF BEARGRASS IN GLACIER PARK, MONTANA.

(See p. 275.)

later applying a top dressing. Early Forcing may be sown at this date. Later sowings may be made in larger pots, with seeds of Canadian Wonder and Maggie, two very reliable sorts.

In low, damp situations trouble is often experienced in keeping Spinach in a healthy condition during the winter. Where this is the case seed should be sown in a three- or four-light frame over a bed of leaves. Sow the seed in drills made ten inches apart. Use the hoe frequently when the plants appear and dust about them lightly with old soot. With careful attention in airing and protection from severe frost, splendid leaves may be picked throughout the winter. Long Standing Pickley is a good hardy variety for this purpose. A sowing should also be made towards the end of January on a south border, placing old garden lights over the plot. The Carter Spinach is a very reliable sort for this sowing.

If the seeds of Tomatoes that were sown at the end of September have failed, or the seedlings become drawn, a fresh sowing should be made forthwith in a glass-house having a temperature of 60°. Grow the young plants as near the roof-glass as possible, and pot them as they become ready into small pots. The compost should consist of loam and old Mushroom-bed manure in equal parts, with a good dash of sharp sand and a little wood ash. Do not pot these early plants too firmly but en-

by Messrs. Armstrong and Brown, Tunbridge Wells, and they illustrate the tenacity with which some of the very distinct species influence the crosses in one of which they were primarily used. The colour of the sepals and petals, which is light reddish-orange, evidently comes from the small flowered *L. cinnabarina*, which, with *L. tenebrosa* produced *L. cinnabrosa*, while the form and substance approaches the *C. Dowiana* in the *Cattleya* parent. The more tubular form of the basal portion of the clear purple lip and its undulated margin is also evidently derived from the *L. cinnabarina* ancestor.

CYMBIDIUM CERES VAR. MURIEL.

FROM the Orchid Nursery of Messrs. Hassall and Co., Southgate, Mr. John C. Cowan, the manager, sends a fine flower, one of a spike of eleven blooms, of the cross between *Cymbidium insigne* and *C. l'Ansonii*, named *C. Ceres*. The flower of the variegated form, *C. Ceres Muriel*, which measures five inches across, has acuminate sepals and narrower petals of light reddish rose colour with thin rose-purple lines and showy lip. The cream-coloured ground of the lip is striped and dotted with dark brownish red on the side lobes, and blotched with irregular markings of the same colour on the front. The column is white, tinged with rose on the upper side and striped with red on the lower surface.

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Orchard Trees.—Orchards containing old trees may be attended to any time during the winter as opportunity presents itself. The trees should be thinned of all superfluous growth and the centres opened to allow the light to enter. When thinning the branches of orchard trees, cut away all weak growths, all shoots that cross each other, crooked growths, and all dead and decaying wood. Trees that have much dead wood should be grubbed up and their places replanted with young trees of profitable varieties. Worthless specimens should be headed back for grafting in due course with varieties that do well in the particular locality. This system is one that commends itself either to small or large growers, especially if the old trees are clean, healthy specimens.

Planting Standard Trees.—The distance at which Apple trees may be planted varies considerably; the effects of soil and situation have a very important bearing on the growth of the trees. Standards in orchards with good soil may be planted 30 to 40 feet apart, and bush trees 12 to 15 feet apart each way. When planting trees on grass land, the holes should be 5 to 6 feet in diameter, and this area kept free from grass and weeds for several years, or in all probability the trees will become stunted and fail to grow satisfactorily. Young trees needing support should be made secure to new stakes.

Standard Plums.—In some localities it is advisable to plant a few standard Plums, as the fruits are always acceptable for cooking and other purposes. Three good varieties for growing as standards are Rivers' Early Prolific, Victoria, and Monarch. Pond's Seedling may be grown as a standard, but the fruit has little to recommend it apart from large size, and need not be included if Monarch is grown. Bullfinches must be kept from standard Plum trees in winter or they will destroy the buds.

Lime.—Where soils are deficient in calcareous matter, this may be added either as chalk, old lime rubble, or quick lime. The last should be spread evenly over the surface and allowed to slake on the soil during the winter, when it may be lightly forked into the ground in the early spring. Lime is essential to all fruits, and especially stone fruits such as Apricots, Peaches, Plums and Cherries.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Seed-raising.—By this time any seeds raised during the past season will be ready for cleaning and placing in packets. Details relating to the origin of the stock and the year of saving should be marked on the packets for future reference. The present is also a good time to examine the seed in packets remaining over from previous seed orders, and decide which is worth retaining for future use. Certain vegetable seeds, notably of Celery, Brassicas and Marrows, retain their vitality for years, whereas others quickly lose their germinating power. Where any doubt exists, the seeds should be tested by placing a given number in heat to observe what percentage of them start into growth. Peas, Beans, and other large seed should be plunged level with the surface in damp sand, and small seed sown on the surface of flower-pots filled with prepared soil faced with a sprinkling of sand, the whole watered and provided with a covering of glass. If, under these conditions, the percentage of germination is low, destroy the seed from which the sample was taken, as it would

be courting failure to sow any not of good quality. Afterwards an alphabetical list should be made, denoting the quantity in hand of each kind and variety so that easy reference is available when the new seed-order list has to be made.

Broccoli.—The plants on the beds should be examined at frequent intervals, and, as the heads develop, the leaves should be tied over to protect them. This applies only whilst the weather remains open, and, should frost appear probable any plants in the above forward state should be removed to a cold frame. Retain the soil about the roots, and take measures to prevent the plants from becoming frozen.

Jerusalem Artichokes.—The stems of these plants should be cut off at the ground level and burnt. It is advisable to lift sufficient roots to last through a period of severe weather, storing them in damp ashes. The main portion of the crop may remain in the ground for some time to come, as the roots lose their flavour if lifted and stored for a considerable period. The white is the most desirable variety, and sufficient tubers of a size suitable for planting should be reserved for that purpose. Cover these with soil to prevent them shrivelling.

Salads.—In order that the supply of Endive should be regular batches of plants should be lifted at weekly intervals and placed in a cool position where the light can be kept from them, and thus ensure perfect blanching. Arrange to do this at a time when the foliage is dry. Chicory and Dandelion should also be forced, but longer periods may elapse between the insertion of fresh batches. Mustard and Cress should be sown in boxes each week. Sown on the surface of a shallow layer of pure loam, the raising of Mustard and Cress is an easy matter. Cover the box with paper until the seeds germinate, and, when growth is an inch high, remove the box to a cool house.

THE FLOWER GARDEN.

By SIDNEY LEO, Gardener to the Dowager Lady NUNBERNOLME, Warton Priory, Yorkshire.

Narrow Wall Borders.—Often, at the base of terrace walls and similar erections, somewhat narrow borders are formed for the purpose of receiving the roots of subjects intended to clothe the wall. This in itself is praiseworthy, but the common practice in some localities of employing bedding plants, suitable to the seasons, for filling the borders is a great mistake. In some aspects no better site can be chosen for choice, hardy plants and those requiring slight protection, than the foot of a stone wall; moreover, such plants associate well in the foreground of climbing species growing against walls, and a good collection provides something of interest throughout the year. Iris stylosa, Amaryllis Belladonna, Tritonia, Paeony, Daphne, Dianthus, Tigridia and Cistus offer suitable subjects, whilst single specimens of Rosemary, Lavender and Moss Roses may be planted here and there. Deeply till and liberally manure the border as the plants will remain undisturbed for a few years, and the incorporating of humus in the ground will enable the roots better to resist drought in summer. In the case of ancient stone buildings, climbers and wall plants should be used sparingly and include varieties of Rubus, such as R. deliciosus, which is seen at its best against old stonework. Again, the treatment of the border needs to be bold and simple; for this purpose a collection of choice herbaceous Paeonies with an occasional plant of Paeony Montan and a few scattered clumps of Lilies should give satisfaction. Stiff, straight edges are reminiscent of the carpet-bedding era and are not altogether pleasing in connection with choice, hardy flowers; therefore, even against grass walks, a little encroaching over the limits here and there is permissible.

Daphniphyllum glaucescens.—This Japanese evergreen shrub is quite hardy, although of very slow growth here. A peaty soil is desirable. It is a distinct shrub, and makes a neat specimen on the lawn. The glaucous foliage and reddish bark are conspicuous features.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens, Kew.

Carnations.—The shoots of these plants should be tied neatly to stakes. Plants in pots that are well filled with roots should be given dilute liquid manure and soot water, but high feeding, with concentrated fertilisers should be discontinued during the winter as tending to produce weak growth; in fact, at any time during the flowering period, it would cause the flowers to damp. In this neighbourhood, where we suffer from frequent fogs and weeks of sunless weather, it is hardly possible to flower Carnations satisfactorily, the blooms damping and also coming very thin and with split calyxes. For the same reasons it is scarcely possible to get suitable cuttings early enough to make good plants by the following autumn, the growths being weak and drawn. Thus we find it best to propagate during November and early December. Where space permits it is a good plan to grow a few stock plants specially for this purpose. At this date the cuttings are best rooted under hand-lights in a cool house; it is true they take longer to root by this method, but the plants are much more sturdy and stocky, and grow away quickly when the weather turns more favourable to plant life.

Malmaison Carnations.—The plants should be kept dormant and not encouraged to grow; use no more fire heat than is necessary to counteract the effects of damp, admitting air at all times in accordance with the state of the weather. Give no more water at the roots than is necessary to keep the plants from shrivelling, and do not let a spot of water fall on the foliage. This is the only way to cure and prevent rust; do not be tempted to spray plants attacked by this disease, for a certain amount of moisture on the foliage and in the atmosphere provides just the conditions suitable for the spread of the disease.

Clivia (Imantophyllum).—Clivias will flower quite well if they are grown in a cool house all the year round. They may, however, be had in flower before their normal time by introducing them to a warmer house; the cooler end of the stove or intermediate house is suitable, and a display may be maintained for a long time by putting a few plants at a time into the higher temperature. The plants are best prepared for forcing by keeping them quite cool and dry at the roots for several weeks; after such a rest they respond quickly to the higher temperature and moister atmosphere. There are many fine varieties of this beautiful subject.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Platyclinis.—Although the individual flowers of Platyclinis are neither large nor showy, the inflorescence as a whole is very effective, and a well-grown plant with a number of spikes is always admired. One of the best species is the spring-flowering P. glumacea which has nearly finished its season's growth. When the pseudo-bulbs are fully matured the plant should be grown in the intermediate house, where it will remain dormant for several weeks. Directly growth becomes active the plant should be placed in the Cattleya house, where the sun is not too bright. P. Cobbiana produces its scapes in the autumn, the fragrant and graceful P. filiformis during the summer, and P. uncatia in winter. Therefore it will be seen that the flowering period of Platyclinis is an extended one. Throughout the growing season the plants should be housed in the Cattleya or warm division and afforded plenty of water at the roots; when at rest a cooler temperature is desirable, and water sufficient to keep the pseudo-bulbs plump. Frequent or annual disturbance at the roots is not advisable; when repotting is necessary it should be done soon after the spikes are removed. The rooting medium should consist of partly-decayed Oak leaves, Osmunda fibre and peat in equal parts, with a sprinkling of crushed crocks. The last

layer should be of chopped Sphagnum-moss. Pots or fairly deep pans are suitable receptacles, and may be filled one-third of their depth with drainage material. *Platyclinis* enjoy plenty of light, and occasionally they are suspended from the roof rafters, but they need shading from strong sunlight, or the young growth will be scorched. When the pseudo-bulbs are formed and growth is well advanced a little more sunlight may be permitted to reach the plants.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Late Grapes.—Keep the pipes in these houses sufficiently warm to justify a steady circulation of fresh air, and at all times prevent sudden lowering of the temperature. If watering is necessary, choose a fine, dry morning for the work, with warmth in the pipes and a circulation of fresh air. Thin-skinned Grapes will now keep quite as well and possibly better in the Grape room than on the rods, and by clearing the houses the vines may be given a longer rest before they are pruned. If not already



FIG. 127.—CLINTONIA UNIFLORA (THE QUEEN CUP) IN GLACIER PARK, MONTANA.

done, the Grape room should be put in a suitable condition for storing the bunches by lime-washing the walls and otherwise making it sweet and clean.

Late Peach Houses.—If root-lifting, root-pruning, or other work is in arrears, proceed with these operations forthwith, with a view to finishing the work, if possible, before the leaves fall. So accommodating is the Peach, that weak and aged trees may be restored to a healthy and fruitful condition in the following simple manner. Remove all the old surface soil down to the roots, then substitute fresh compost consisting of good loam, old lime rubble and bone meal. Make the soil very firm by ramming, water it well with diluted liquid manure, and later mulch the surface with short stable manure, or in the case of very light soils, old cow manure.

Succession Houses.—All cleansing operations in these houses should be attended to as opportunity permits; especially during wet or inclement weather. As each house is put into working order, the border should be lightly forked, watered if necessary, and topdressed with fresh compost. A mixture of two-thirds fairly strong maiden loam and old lime-rubble one-third, makes an excellent compost for vigorous, young trees, more likely to grow strong than weak, whilst for older trees, a little bone meal and Peach manure may be added.

SOME INTERESTING PLANTS IN GLACIER PARK, MONTANA.

Upon reading in the *Gardeners' Chronicle* of October 2 (page 164) the note concerning the finding of *Spiranthes Romanzoffiana* in British Columbia, I was reminded of a photograph of this species which I took in Glacier National Park, Montana, in the summer of 1919. Glacier Park is in extreme North-Western Montana, and adjoins the provinces of British Columbia and Alberta. The *Spiranthes* is not very common in that locality, but it grows in some abundance in certain places, especially in marshy soil under Willow bushes, and in the Sphagnum bogs about small lakes. In some parts of the Rocky Mountains the plant is plentiful, and I have seen it in great abundance in the mountains of northern New Mexico. It is one of the most attractive of the Rocky Mountain Orchids. The spikes are large and conspicuous, and their three-cornered arrangement is noteworthy. The flowers are pure white and delightfully fragrant.

I enclose a photograph of the Bear Grass (*Xerophyllum tenax*) (Fig. 126), known also as Indian Basket Grass or Squaw Grass. This is the most showy and striking plant of Glacier Park, where it covers many acres, often to the exclusion of nearly all other vegetation. The flower stalks are three to four feet high and of stately appearance. At the beginning of the flowering season the racemes are rounded, and because of their soft, fluffy appearance at this stage, the plant is sometimes called, locally, Bear Paws. Later the racemes elongate. The flowers are creamy-white and have a rather heavy fragrance, which is not altogether pleasant. The plants are in flower all the summer, beginning on the foothills in spring, and continuing through late summer, about the edges of snow banks at high altitudes (7,000 to 8,000 feet) until snow falls. The tough, grass-like leaves were formerly much used by the North-Western Indians in the manufacture of fine baskets. To what extent the Bear Grass is found in cultivation I do not know, but it would certainly be a desirable plant in suitable situations.

One of the most attractive flowers, covering mossy banks in deep woods in Glacier Park, is the Queen Cup, *Clintonia uniflora* (Fig. 127). It has pure white, star-like flowers, followed by round berries of a deep Prussian blue colour. The latter have a poisonous appearance, but though inedible they are not poisonous. The Lumber Pine, *Pinus flexilis* (Fig. 128), is a common plant in exposed wind-swept places. Paul C. Stanley, Assistant Curator, Division of Plants, Smithsonian Institution, Washington, U.S.A.

NOTES FROM KEW.

THE continuously bright weather has resulted in a perfect display by numerous autumn fruiting trees and shrubs. The open weather has not restricted the food of birds in other directions, consequently the feathered populace has not fed so closely on some of the most showy fruiting subjects.

Three Thorns are prominent—*Crataegus uniflora* (syn. *parvifolia*), a small tree or shrub with globose, greenish-yellow fruits; *C. cordata*, the Washington Thorn, an attractive specimen tree, 20 to 25 feet and occasionally more in height, bearing quantities of scarlet fruits $\frac{1}{2}$ inch in diameter; and *C. Carrieri* (*C. Lavalléi*), with large, orange-red fruits and rich orange, bronze, and yellow foliage.

The Cotonasters have received several very valuable additions by recent introductions from China, but *C. rotundifolia*, with its shining, scarlet-red fruits, is still unsurpassed. The fruits are large for a Cotonaster, being $\frac{1}{2}$ inch in diameter, and it is only in very severe winters that the foliage and fruits disappear before March. *C. Harroviana*, from Yunnan, introduced by Mr. E. H. Wilson, is very ornamental as a large bush, with evergreen foliage and quantities of red fruits,

C. salicifolia, var. *floccosa*, and var. *rugosa*, are both evergreen bushes, with corymbs of red fruits, *rugosa* being readily distinguished by its larger leaves and fruits.

The Barberries are interesting, and the newer Chinese species are the most prominent. The most striking one is *Berberis subcaulata*, after the style of *B. Wilsonae*, but much more vigorous, hence the quantities of coral-red fruits are seen to advantage. *B. polyantha*, *B. Francis-Ferdinandii*, and *B. Stapfiana* are also conspicuous.

Viburnum betulifolium is a handsome, free-fruited, deciduous shrub, some 6 feet high, with corymbs of dark-red, shining fruits. Very distinct from this is *V. Davidii*, $1\frac{1}{2}$ to 2 $\frac{1}{2}$ feet high, a low-growing, spreading shrub, with large, dark-green, evergreen leaves and clusters of porcelain-blue fruits. As it thrives in partial shade, there are possibilities of its use as an undergrowth beneath deciduous trees.

The Pyracanthas have been much to the fore during recent years, and deservedly so, for they are valuable evergreen wall shrubs and attractive large bushes. Just at present *P. Gibbsii* is the most showy, with shining red



FIG. 128.—A WIND-SWEPT SPECIMEN OF THE LUMBER PINE (*PINUS FLEXILIS*) IN GLACIER PARK, MONTANA.

fruits, but even more important is *C. crenulata* var. *yunnanensis*, because the light-red fruits, though rather smaller, hang on the bushes far into the new year. There are also plenty of fruits on *P. angustifolia*, a rather tender shrub for the open ground, but most useful against a sheltered wall. From now until March, when the fruits assume a rich orange-yellow hue, this is an interesting shrub.

Celastrus articulatus is a vigorous climber which, if opportunity allows, will spread from the supports provided, and fix itself to trees and twine among the branches. In autumn the leaves turn a rich, golden-yellow. At this time the green-pea-like pods gradually assume a golden hue, and later, as they ripen, split open, revealing a three-valved fruit, each containing a scarlet-coated seed.

The Horned Holly, *Ilex cornuta*, introduced by Robert Fortune, does not fruit freely as a general rule, but this autumn it is quite attractive, with showy, red fruits, larger than those of our native kind. A pleasing contrast to these are the black fruits of the large-leaved Japanese Holly, *Ilex crenata* var. *major* (syn. *elliptica*). A. O.

EDITORIAL NOTICE.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the **EDITORS**, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

No. 23.—THE HARVEST.

IN a sunless climate like this, it is very difficult to forecast the arrival of harvest-time, and I have been afraid to be as much too early for some of my treasures as I was too late for others in the torrid summer of Siku. Nature, however, makes her own pace, and seeds have their moment of maturity precipitated by the arrival of the frosts, rather than by any interposition of the sun. For a long time, indeed I viewed the persistently green capsules of the Rhododendrons with dismay; they never seemed to change or develop in the smallest degree, and I began to fear I might have to sit among the snows far beyond Christmas, when I had hoped my year's work might be over. I did not then realise how the seeds and woody valves of Rhododendron continue desiccating and ripening inside, though the fleshy outer envelope remains as green as ever, till the frosts, by nipping this into dryness, split it open. In point of fact, all has not only gone off well, but with clock-work exactness. The first Rhododendron to greet me with gaping pods was *R. eucchrom*—that beautiful low-spreading bush whose funnel-shaped flowers of flaming orange I have already noted. And, after them, the others followed, in an orderly stream, from the middle of October onwards—though the first of all to flower has proved the last of all to ripen. Nor, alas! is there that certainly I should like among the seeding habits of Rhododendrons. Some of the richest in flower are some of the poorest in seed, and of some species, abundant in their bloom, one may vainly hunt the seed over hundreds of trees.

But, though Rhododendron, of course, constitutes the bulk of the quarry, autumn reveals many other trees and shrubs well, worthy of quest, were it only for the colouring of their foliage. The autumn colouring on these Alps, between 10,000 and 11,000 feet, is very beautiful, in blotches of yellow and scarlet and crimson, among the dark-green rather than in the solid drifts of colour that such things as Maple and Berberis afforded in Northern China. Maples, in fact, play but a very poor part here, and I am disappointed of my high-expectations in them. There seem to be several species, but not one of them is any better worth growing than the commonest we have at home, while the one solitary specimen that had any brilliancy made up for this by having no seed. *Euonymus* compensates a little with crimson leaves and there are some fine yellow tones, but the richest effect of all are provided by one (or two) species of *Pyrus*, small and high alpine Mountain Ashes of the uppermost cove or open slopes, which seem to range between 1 inch of height and 8—10 feet, with fruits of pale coral-pink or crimson, that in autumn all pass through the most glorious sequence of shades, from blazing scarlet and blood-colour to bronzy-red and fiery incandescence. These are, beyond any question, the richest autumn-

colourers of these Alps, but there is also another, and a rare *Pyrus*, which forms a fine tree at 10,000 feet, in the more open reaches of the forest, and whose pinnate, ample foliage passes to so sumptuous a metallic set of shades, from citron to maroon, that among them the large bunches of soft-pink berries fade into insignificance.

Berberis does not do so well as *Pyrus*; indeed, this race is another whose representation about here is poor. On the Hpimaw pass lives a little evergreen, which therefore takes no autumnal colouring, and whose black fruits have no charm, though its large, fragrant, yellow flowers are pretty. This plant is repeated on a larger scale in the lower forest. The limestone ridge of Luk-Sang gives a neat *Wilsonae*-like little deciduous bush, and the limestone woods of the Feng-Shui-Ling give at least two large arborescent *Mahonias* that disconcert the collector by only coming into bloom in November. But there is one *Berberis* of outstanding merit in fruit and in autumn, whatever its bloom be like. This is a very high-alpine, occurring either by itself in colonies or else among the scrub of dwarf Bamboo, at 13,000 feet, on the open wind-swept arête at two points only. It is a stiff little deciduous shrub of a foot or two, turning a gorgeous scarlet in October, and its fruits are the largest I know, oval, pendent scarlet berries, as big and pulpy as some small Grape.

Some of the Conifers here are disappointing, in that they seem to mature their seed through the winter, and not to be ripe until March. This fault belongs both to the noble *Tsuga* that abounds above 9,000 feet, and also to the very beautiful great glaucous green Pine that is rare on this side of the range, but abundant over on the Chinese. It belongs also to an uncommon Spruce in the limestone valleys of the Feng Shui-Ling—a tree so stately and well-furnished in its maturity that from afar I long mistook it for the above-mentioned *Pinus*.

But all momentary or partial failures are redeemed by my complete triumph over the Coffin Tree. Of this I have come to think so highly as to believe it will prove an introduction of the very greatest economic importance, quite apart from its hardness and beauty, for its bark produces a rich "cedar" oil, while its wood so far surpasses that of *Juniperus virginiana*, both for grain and for fragrance, that I feel convinced it will drive all other Junipers (which all have to be imported) quite off the market, for "cedar" pencils and "cedar" cabinets, for this treasure turns out, I find, not to be a Cypress, but a true Juniper; and hailing from 10,000 feet and over, in dull, chill mountain woods, must certainly be quite impregnable to English summers and winters. The fancy value attached to its wood by the Chinese speaks volumes for its quality, as it is not for anything of secondary merit that that thrifty people would import it from over the Alps at such an immense cost of time and trouble, and then purchase it at the rate of £60 or £70 for a single 7-foot plank—a price which ought to foreshadow a sound economic return at home, after the 30—40 years of good forestry that will probably be required to produce it. Not that I believe the tree to be of slow growth; but we have not yet struck the main centre of its distribution, which lies in the Alps further north. And, in the Chimili woods it is rare and evidently not at its happiest, while a few miles further south above Hpimaw it does not occur at all, to the best of my investigations and belief. It is replaced here, indeed, by another tree-Juniper, but this, though fragrant and stately and sumptuous enough to deserve the highest commendation in

other circumstances is completely relegated to obscurity by the remarkable accumulation of first-rate qualities possessed by the Coffin Tree. The last of the local Junipers is not one that can compete even with the second species—a handsome tree with dense, heavy flocks of hanging foliage, which the devout employ for incense on all religious occasions—for this is but a thick dwarf *Savine* of no particular interest that occurs in drifts of deep green along the highest ridges at 13,000 feet. The Valley-Pine (*Pinus longifolia*?) is yet another that only seems to ripen with the arrival of spring, though did have the good-luck to happen on a tree of the Feng-Shui-Ling *Picea* with maturing cones. And Larix spells a mitigated tragedy, for in the Chimili woods (and in others) I saw, at one point, some half-a-dozen trees of a handsome and elegant Larch (which, I am told, abounds further West, on the westward slopes of Imaw Bum). But when I went at last for the cones, they had all opened and shed, and it took us many a weary hour to worry out the few lingering seeds that were all a whole pile of cones would yield. *Reginald Farrer.*

THE FLORA OF THE SOMME BATTLE-FIELDS.

RECENT French statistics show that about one half of the cultivated land devastated by the war is now being utilised. The dogged energy of the French peasant is steadily, if slowly, dealing with the deserted areas, therefore, anyone who would study the flora of the battle-fields should do so next summer without fail.

It is to be hoped this interesting subject will yet tempt some competent writer. In a lately published volume, the fact that the London Rocket (*Sisymbrium Irio*) owes its modern name to the profusion with which it sprung up among the ruins of the Great Fire of London, was duly noted; and the Great War may possibly leave similar floral souvenirs. Mile after mile of country still lies unbroken by hedge, fence or wall. The "lunar landscape" of wartime has, however, long since given place to a vast rolling prairie of waving herbage, and the rough shanties, few and far between, accentuate this "Wild West" idea. Only the skeleton woods of blasted trees standing white and naked above the tangled green undergrowth, and the avenues of shattered, splintered trunks along the high-roads remain to remind one of wartime photographs.

The systematic shelling of huge areas has pitted the whole countryside with craters. These, filled with rainwater in the wet season, form so many tiny ponds propitious to semi-aquatic plant life. *Aveluy Woods* may thus be seen, rosy with the Willow Herb one usually associates with streams and ditches, and clumps of Bulrushes flourish and frogs abound on the heights of Serre.

The most characteristic battlefield flower is perhaps, the Charlock, which seems to flourish at every level and in every month. Its bright yellow patches broke the monotony of Vimy Ridge in spring, and the desolation of Sansage Valley in October; it is as persistent and all-pervading as a certain notorious "gas" which bore its name. More local and shorter in duration, the blood-red masses of flowers that made the Somme a veritable Poppyland in summer are not less emblematical of the sanguinary struggle that thrice swept over this area. The only other scarlet blossom, the tiny *Pimpernel*, creeps along British graveyards along the Ancre Valley, and dots the slopes of the fiercely-disputed Butte de Warlencourt, which stands like a modern Calvary on the high-road from Albert to Bapaume, conspicuous from afar by reason of the three great crosses erected as memorials of the Empire's sons.

The weeds seem to have taken upon themselves to deride the rash prophets who foretold that no green thing could grow on soil churned by chemical explosives month after month.

* The previous articles by Mr. Farrer were published in our issues for June 21, June 25, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, April 24, May 29, July 10, July 31, September 4, and October 2, 1920.



PERPETUAL-FLOWERING CARNATION "GORGEOUS"

Nettles are six feet high at Serre, and almost as remarkable at Thiepval. Thistles abound everywhere, with tall, gaunt Sorrel, scarcely distinguishable from the rusted barbed wire standards that still linger round Beaumont Hamel ridges. The White Campion and the Yellow Toadflax, Mallow, Hawkweed, St. John's Wort, tall, woolly Mullein, and occasionally huge Teazles, Meadowsweet, Wild Parsley, and twenty other flowers of our waste lands may be gathered on these solitary slopes. On a summer's day, when bees and butterflies are busy and brilliant, half the horror of the landscape is lost under the variegated mantle that Nature has thrown over the scars of war.

The woods, ghastly from a distance, are, on nearer approach, seen to be full of life below. Over the rotting tarpaulins and abandoned furniture, dug-outs and war debris of Mametz Wood, the Dog Roses, densely decking the June foliage, linger longest in the memory.

As the plough steadily drives its furrow further and further afield, we hear less and less of the once much talked of scheme for afforesting the wasted area. Such an idea may possibly be carried out in places where the peasants do not care to return—Thiepval, it is said, is still under discussion. But where they return (and how they are returning the steadily increasing number of huts in all accessible spots testifies) the cropping of the land is a mere question of time. The little belt of cultivated land gradually extends round each group of shanties. La Boisselle, familiar to all since July 1, 1916, now boasts half a dozen huts, of which three are cafés. But the proprietor of one of these latter, directing a couple of British tourists to the famous "mine craters," asked them to "go through the garden at the back." That long, carefully-tended kitchen garden, flourishing among the surrounding wilderness of weeds, grass and Nettles, remains in the memory as an earnest for the future. Give these sturdy workers a roof over their heads, means of communication, and a few implements, and the flora of the battlefields will soon be a thing of the past. But the "adoption of villages" makes terribly slow progress in England; at least, so it seems to a Briton who roams through these unhappy regions. F. A. White.

TREES AND SHRUBS.

FORMOSAN CONIFERS.

MR. BEAN'S letter on this subject (p. 215) interests me, because, in company with Mr. R. M. Price, I was fortunate enough to see these wonderful trees in 1912, and described them in a short paper on the "Forests of Formosa" in the October issue of the *Journal of Forestry*, vol. vi., p. 267 (1912). I do not know whether Mr. Bean or Mr. Wilson is responsible for the name "Formosan Redwood" which is given for the remarkable tree, *Taiwania cryptomerioides*, but if it implies any resemblance to the Californian Redwood it is not appropriate. The excellent photograph of a young tree, taken, I presume, by Mr. Wilson, gives no idea of its appearance when mature, and the tree which I thought it resembled most nearly, is the Chilean *Araucaria*, which I have also seen in its native forest. The largest specimen that I measured stood in 1912 close to the post office at Arisan, and was beautifully photographed by Mr. Price, who, I hope, will soon publish the account of his botanical explorations in Formosa, which were interrupted by the war. This tree measured 190 ft. high by 24 ft. in girth, and it may well be that taller ones exist. But even if it attains 200 feet it would not, as Mr. Bean suggests, be the tallest of the Old World Conifers, as I have measured in Sikkim a fallen tree of *Picea spinulosa*—better known as *P. morinoides*—which exceeded 220 feet. I believe that trees as tall as *P. Morinda* exist in the N.W. Himalaya. I very much fear that this wonderful tree will not prove hardy in Great Britain or in New England, as the climate of Arisan was in February, at the coldest season of the year, very mild compared with the winters here or in Japan.

Chamaecyparis formosensis, which grows far more abundantly in the same forest, is the largest Cypress in the world, the three biggest which I measured, being as follows, 190 by 30 feet, 166 by 40 feet, and 162 by 60 feet. All these were close to the line of railway at Arisan, and the last, known to the Japanese as God's Tree, was considered the largest then known to exist. Judging from a careful count of the annual rings of felled trees by Mr. Uyematsu and myself, I believe that this species may live for 1,000 to 1,500 years. We saw two other remarkable Conifers in Formosa not mentioned in Mr. Bean's article, namely, *Cunninghamia Komishi*, Hayata, which attains a very large size on Mt. Randai, at about 7,000 feet, and *Libocedrus macrolepis* Benth., hitherto known only in China, but which, in the north part of Formosa, was abundant, and very highly valued for its timber.

Keteleeria Davidiana was also seen by us, in the north part of the island, and when the

both temperate and tropical. The decline of its popularity as a street tree in America has been going on for many years past on account of the odour of the flowers and the nuisance of the pollen. There are male, female and hermaphrodite trees and it care were taken to propagate the two latter only, the nuisance of the pollen could be abated. The hermaphrodite flowers have only two or three stamens, whereas the males have ten. Some years ago there was a fine tree in the western suburbs of London, about 50 ft. high and 40 ft. in spread. This must have been a hermaphrodite tree, for it fruited splendidly, and the reddish samaras were highly ornamental. There were no other large trees in the district so far as I could discover. It had to be cut down owing to the necessity for widening a railway line. There are a good many small trees in the western suburbs, planted both as street trees and in private gardens, but they are lopped every few years, or every year in some cases, to get leaves of great length, so flowers are out of the question. J. F.



FIG. 129.—*VIBURNUM RHYTIDOPHYLLUM* AT DAVENHAM, MALVERN.

high mountains which were inaccessible in 1912, owing to the chronic warfare which existed between the savage aborigines and the Japanese, can be explored, I have little doubt that other, and perhaps new species of Conifers will be discovered. H. J. Elwes, *Coltsborne*.

THE AILANTHUS

It is surprising to learn of another name being given to the tree best known in this country as *Ailanthus glandulosa* (see p. 224). At least seven synonyms have been previously recorded, including some garden ones. It is the fate of many popular plants to have a greater or lesser number of names. That the *Ailanthus* is popular may be assumed from the fact that it has been planted in all parts of the world,

VIBURNUM RHYTIDOPHYLLUM.

I ENCLOSE a photograph of a specimen of *Viburnum rhytidophyllum* (see Fig. 129) growing in these gardens. The plant is about 12 ft. high and quite handsome. Although introduced twenty years ago it does not appear to be well known, notwithstanding that it is a fine subject for a lawn specimen. It is evergreen, and its dark green leaves, 9 inches long and 2½ inches wide, with a woolly under-surface, are very attractive. *Viburnum rhytidophyllum* bears large clusters of yellowish-white flowers, which are followed, in autumn, by red berries. Our specimen was planted nine years ago in stiff loam; it is one of the finest I have seen, and is now full of flower buds. C. A. Bayford, *Davenham Gardens, Malvern*.

FLORISTS' FLOWERS.

NEW CARNATIONS.

THE British Carnation Society has registered the following new Carnations during 1920. The names of those submitting the varieties are given in each case:—

Cholita.—Seedling. Colour pale salmon; size 3 inches; good fragrance; stiff, erect stem; good calyx; bloom of regular form, edge of petals nearly smooth.—Misses Price and Fyfe.

Robin Clover.—Seedling. Colour, buff ground with cerise markings; parentage Sunstar × Seedling; size 3 inches; fragrance fair; habit very stout and erect; growth very vigorous.—Mr. C. H. Taudevin.

Lady Greenall.—Seedling. Rich royal purple; parentage Perfection × Enchantress; size 3½ to 4 inches; good fragrance; habit and stem erect and strong.—Mr. C. H. Taudevin.

Chastity.—Sport from an American imported plant; colour pure white; size 3 to 3½ inches; medium fragrance; habit and stem vigorous.—Mr. James Green.

Jessie Allwood.—Orange yellow; size 6 inches; mild fragrance; true Malmaison type, 2 ft., very strong. Approximate date when first flowered, 1914.—Messrs. Allwood Bros.

Wivelsfield Apricot.—Seedling. Apricot self with occasional delicate markings of pinkish bronze; size 3½ inches; mild fragrance; perfect calyx, stem perfect, 2 to 2½ ft. First flowered 1914.—Messrs. Allwood Bros.

Wivelsfield Claret.—Seedling. Clear shade of claret; size 4½ inches; fragrance very full; perfect calyx; habit of plant resembling Enchantress but freer; stem of good strength and length. First flowered in 1915.—Messrs. Allwood Bros.

Thor.—Seedling. Scarlet; flower 3½ inches across; good fragrance; free habit; long stem and perfect calyx.—Mr. C. Engelmann.

Avondale.—Seedling. Deep salmon pink; size 3 inches; very strong; compact habit; long stems. Parentage, Perpetual Border Seedling. Excellent and true Border form.—Messrs. Allwood Bros.

Tess.—Seedling. Large, full white bloom; a free-flowering, stiff-stemmed variety; keeps well and is sweetly scented.—Mr. Ernest W. Bishop.

WINTER-FLOWERING CARNATIONS.

It is now generally recognised that the Perpetual-flowering Carnation is one of the most adaptable flowers for all garden purposes, and its special merit of blooming in winter is of great value to those who are called on to provide choice flowers during that season. Great progress has been made with this Carnation in recent years, and it is gratifying to know that British raisers have gained the supremacy, for home-raised novelties are not only more numerous, but equal to any sent out by foreign growers.

The fact that the plants are continuously in bloom—spring, summer, autumn and winter—renders this race of Carnation especially valuable, but to have them in bloom in winter strong plants must be specially grown for the purpose. Weak plants are never a success, and they will not respond either to extra warmth or high feeding, in fact, this particular type of Carnation requires very little warmth or stimulants at this season. Plenty of fresh air and a moderate amount of warmth are all that are required, but most important cultural detail is care in watering. The grower should guard against an excess of moisture at the roots in winter, and if this is observed and the plants not syringed overhead, there will be very little trouble with either aphid or rust.

The best plants for winter flowering are those raised from cuttings rooted during January, and if the propagation is continued for about three months plenty of stock will be available for blooming all through the winter. Strong plants should be afforded a shift into large pots during March when they are about twelve months old, and such plants will make fine flowering specimens throughout the following summer and winter. The potting needs to be done with extra care. The compost may consist of good loam that has been stacked for a year, mixed with ½-inch bones, a small quantity of fine limestone chippings, a small quantity of soot, and about 2 lb. of Carnation fertiliser to each barrowful of soil. When potting, ram the soil firmly. If the plants are well watered previous to potting, moisture will not be required until the soil gets dry, which it will not do for several days, when water should be used liberally.

The selection of suitable varieties for winter flowering is important, and I have found those enumerated below amongst the best for the purpose. The purest white sort is Wivelsfield White, and if this and White Enchantress are grown they will provide beautiful white blooms in winter. Enchantress Supreme is pale salmon, and all that would be wished for in a variety of that colour. Salmon Enchantress is also very handsome. The beautiful cerise-flowered Destiny is always admired. Mary Allwood is an outstanding variety in the red section, which the raisers describe as cherry-salmon, and one of the most popular of all. Gorgeous, which forms the subject of the supplementary illustration in the present issue, is one of the older sorts and still good, but many growers consider the newer Destiny to be a superior variety. Wivelsfield Wonder belongs to the fancy section; it has silvery-white blooms flaked with rose-pink. The habit is strong, the stems ideal, and the calyx non-splitting. Wivelsfield Beauty (see Fig. 131) is another of this type, the colour being pale yellow suffused with vermillion, is an ideal variety and quite one of the best for winter blooming. The flowers are in much demand for buttonholes, the making of sprays, and the decoration of tables. The plant is one of the very best growers and disease resisting. Toreador is a pale flesh-pink variety flaked with red. The blooms are perfect in shape. The plant is a splendid grower. Mrs. B. P. Cheney is a very pretty fancy, being white pencilled red,

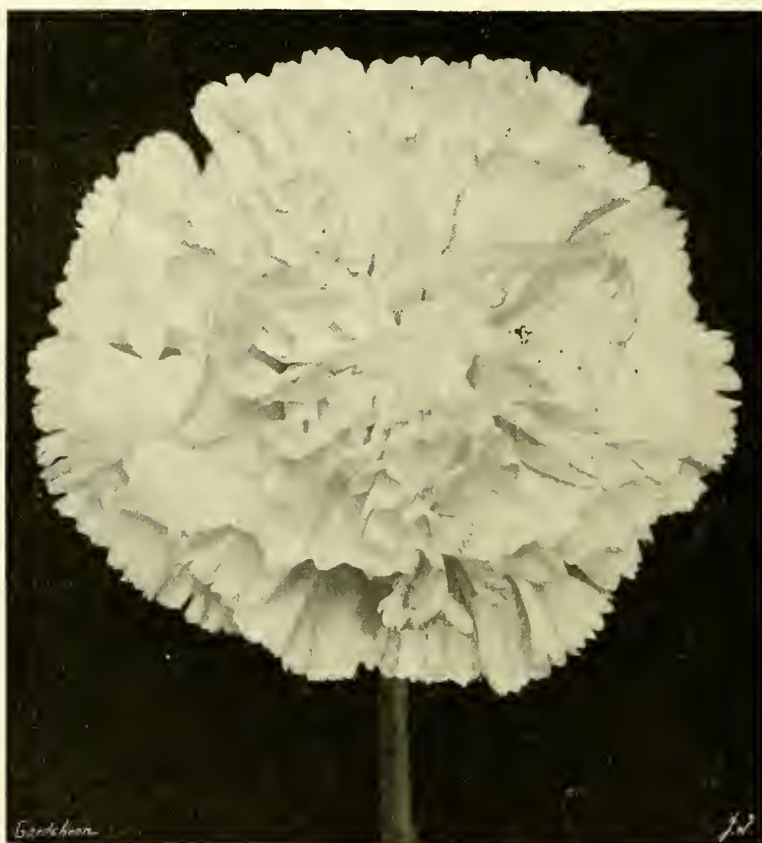


FIG. 130.—PERPETUAL CARNATION WHITE PEARL; R.H.S. AWARD OF MERIT OCTOBER 5, 1920.

Dawn.—Seedling. Mauve and cerise; average size; fragrance good; habit and stem good, strong.—Mr. E. Guile.

Mrs. Walter Hemus.—Colour pink; size 3 inches; fragrance good; habit and stem very good, seldom bursts its calyx; a good winter variety, and excellent for market purposes.—Mr. Walter Hemus.

St. George.—Bright orange-scarlet, a rich winter colour; well built, clean edged flower; very prolific; stiff stems, medium height.—Mr. Ernest W. Bishop.

Mrs. T. Ives.—Seedling. Colour bright salmon; parentage Low's Strain and Dörner's; size 3 inches; delicately perfumed; habit and stem very free and productive; stem of medium length.—Messrs. Stuart Low and Co.

Fancy Carola.—Salmon pink with red stripes; 3 to 4 inches in size; scented; habit and stem same as in Carola.—Mr. C. Engelmann.

Bona.—Seedling. Bright salmon pink; size 3 inches; scented; habit and stem true perpetual flowering type, stiff stem; a fine market variety.—Mr. C. Engelmann.

Dolly.—Seedling. Salmon pink, parentage May Day × Lucy, salmon pink; size 4 inches across; good fragrance; free habit, good length stem; perfect calyx.—Mr. C. Engelmann.

Lord Lambourne.—This variety is deep scarlet pedigree seedling; size 3½ inches; fragrant; sturdy grower; stiff stem.—Messrs. Stuart Low and Co.

Jazz.—Yellow, with bright red stripe; size up to 3 inches; slight fragrance; habit and stem good.—Mr. C. Engelmann.

Clarice.—Sport from Mrs. J. L. Cross. Light pink, suffused and striped deep coral; size 4 inches; good fragrance; habit and stem free and strong; strong calyx; colour does not fade.—Mr. W. G. Douce.

Felicity.—Sport from Fanny. Colour bright cherry red, size 3½ inches; strong grower, good guard petals making a round neat flower; calyx quite sound.—Mr. W. G. Douce.

Edward Allwood.—Seedling. Brilliant scarlet; size 3½ inches; full fragrance; long, erect and strong stems. Parentage, Mary Allwood × Scarlet Seedling.—Messrs. Allwood Bros.

the bloom makes a fine coat flower. Wivelsfield Apricot is also a gem of a unique colour; when this variety is well known it is sure to become popular. Wivelsfield Claret is the only one of its colour and the plant is a good grower. Triumph is by far the best crimson variety for winter flowering and is a very consistent bloomer and a strong, healthy grower. The old Mikado is still popular and is ever so good in winter. The orange-scarlet Beacon is a fine flower and quite one of the best. I have purposely omitted many old favourites. The photograph of the plant of Wivelsfield Beauty, reproduced in Fig. 131, was taken at the end of October; the plant was raised from a cutting struck in January of this year. J. A. Cook, *Dryham Gardens, Walton-on-Thames.*

CHRYSANTHEMUMS AT CROOKSBURY HOUSE.

MANY exceedingly fine Chrysanthemum flowers were recently noticed at Crooksbury House, Farnham. The exhibitions in the south, at least, are too early for some of the more gigantic Japanese varieties, and we seldom see in public characteristic specimens of Louisa Pockett, the largest of all. This variety was represented at Crooksbury by flowers near 11 inches in width and depth. Mrs. G. Drabble and W. Rigby were perfectly finished globes of similar dimensions, and Queen Mary, 11 inches by 8 inches, with its yellow sport, Princess Mary, a trifle less in measurement. Splendidly grown and richly coloured blooms of R. C. Pulling, 9 inches wide and the same deep, were seen on the occasion of an earlier visit, when the incurved H. W. Thorpe was seen in great form as a decorative flower. The new Japanese variety, Majestic, is quite first rate, and it gives a new colour—apricot.

A new incurved form, Percy A. Dove, pure white, is about as fine as anything yet raised in that class. Among the singles, Mrs. Loo Thomson and Golden Mensa approach the ideal, and Margaret de Quincey is a choice, light pink. Phyllis Cooper is almost the deepest yellow of all. Sandown Radiance is a giant crimson; the mauve Molly Godfrey is a giant, too. The foregoing are a few conspicuous varieties cultivated in a masterly style by Mr. H. Shoesmith, jun., the gardener. *Visitor.*

INDOOR PLANTS.

NERIUM OLEANDER FLORE PLENA.

THIS beautiful shrub, with highly fragrant blossoms, is now seldom seen in our greenhouses, probably because it will not bloom well unless kept free from insect pests, many of which infest it if they have the opportunity. It is almost hardy, and will survive the winter in the open air in South Devon, if planted in a sheltered corner; but in such a place it blooms so late in the season that frost is likely to injure the flowers. It should, however, when grown in a pot, spend the autumn, after blooming, in the open air, and only be taken under cover in November, after which time, until March, it should be kept rather dry, and in a cool place free from frost. In March the plants should be grown in a warm, sunny position, close under the glass roof of the greenhouse, and their roots supplied with tepid water in increasing quantity as new growth appears. If treated in this way, it will blossom abundantly; but the three young shoots surrounding the flowers must be carefully preserved, for on the strength of the embryo buds they contain depends next year's flowers. There has been a mistaken idea that these shoots should be cut away when they appear, which is probably responsible for much disappointment. When an old Oleander becomes leggy and bare, it should be cut down to about one foot from the soil in March, thoroughly cleansed, and repotted when new growth appears. The best young shoots may be rooted at the same time in a warm greenhouse, placing each slip in a small pot of sandy soil and keeping this very moist. *I. L. Richmond.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The late Mr. Reginald Farrer.—I desire to add my little tribute to the memory of the late Mr. Reginald Farrer. All keen lovers of hardy plants will deeply regret his loss. He enriched our gardens with many gems of the Alpine flora; he gave us many works of vivid interest and full of information for the gardener; he instilled into many a true love of flowers; and gave us new methods of coping with the difficulties which beset the path of growers of troublesome things. One did not always agree with him in his conclusions, but this was quite consistent with admiration of his work and an earnest hope that he might be long spared to help the Alpine lover and to endow us with many more new plants. Alas! this was not to be; and he has passed away in a strange land, far away from his home treasures, which some of us have seen and enjoyed. As gardeners, we owe to him the real introduction of the moraine to aid us in cultivating difficult subjects, and those of us who have traversed that narrow path on the face of his wonderful cliff garden will never forget the boldness of



FIG. 131.—CARNATION WIVELSFIELD BEAUTY.

the conception which received its fulfilment among the Yorkshire hills. We shall all miss his writings in your columns, but we shall always have with us, and shall always prize, the volumes which in such vivid language portrayed the plants he grew—volumes which culminated in that great work, *The English Rock Garden*. *S. Arnott.*

The Status of Park Superintendents.—In a recent issue of the *Gardeners' Chronicle* there appeared an advertisement inviting application for the position of Superintendent of Parks and Open Spaces. A perusal of the schedule of duties, however, which the corporation have issued would suggest that the advertisement was wrongly worded, and that what the corporation requires is a foreman gardener to work under the direction of the borough engineer. It would appear that the gentleman appointed is in all his duties subject to the supervision and direction of the borough engineer, and had these conditions been shown in the advertisement it would probably have saved a certain amount of disappointment amongst prospective applicants who have written for the form of application and schedule of duties. It is hardly likely that a technically trained man who has given his life to horticultural work would be prepared to receive his directions and instructions from an

engineer. When the development of parks and recreation grounds was in its infancy it was, of course, necessary to put the work in the hands of some existing official, and this was frequently the borough or city engineer. The influence of the engineer is seen in many parks in the country, in the methodical and geometrical treatment of the natural conditions of the land. An engineer's training produces a desire for mathematical precision, to which Nature cannot be reconciled. The horticultural and landscape effects do not appeal to him. *Horticulturist.*

Rhubarb Failure in 1920.—I have not come across a satisfactory explanation of the very wide-spread collapse of Rhubarb plants last spring and should be very interested to hear the opinions and experiences of the readers of the *Gard. Chron.* My own Rhubarb started well, both recently planted and old crowns, and very soon after collapsed, many stems withering as they do normally in November, and no new growth occurring. This failure was general in Glamorgan and I have heard that the same phenomenon occurred in the Thames valley and in the North of England. My own beds have never really recovered, though a small quantity of stems have been produced during the summer. I know of one case where a small bed in a local private garden collapsed similarly in spring, but apparently entirely recovered and bore good stems abundantly. My theory at the time was that the growth being soft after an exceptionally mild winter, a few very cold nights which did much damage to fruit trees were responsible also for the collapse of the Rhubarb. I cannot think that this was the sole reason, however, or recovery would have been general. It is attributed loosely to "a disease" by some growers. I have raised my plants and their condition is such that it does not seem advisable to leave them. The actual crowns are small but apparently healthy and suitable for growing on if cut away from the main mass of root. There are signs of decay in the centre of the large roots, however, and some are hollow. These plants were not more than a few years old and these failures were not the result of old age and exhaustion. *Caltha.*

The Glory Pea.—In your issue for November 20 (p. 256) a correspondent refers to *Sutherlandia frutescens* as the Glory Pea of New Zealand, commonly known as *Clianthus Dampieri*. This, of course, is incorrect, as the plant in question—*Sutherlandia frutescens*—is a native of South Africa; and is known as the Bladder Senna of the Cape. It represents a monotypic genus, and must not be confused with the common Bladder Senna, *Colutea arborescens*, a hardy shrub. *Clianthus Dampieri* is the true Glory Pea, and is a native of North and South Australia and New South Wales; and is one of the most difficult of greenhouse plants to cultivate successfully. *Clianthus puniceus*, the Parrot's Bill, is a native of New Zealand, and at one time was commonly grown in greenhouses. It is a fine subject for the roof or for clothing a pillar. In Devon and Cornwall it is commonly seen out of doors, where it is a fine wall shrub. The plant will cover a wall space ten to twelve feet high, and produce its brilliant scarlet flowers in great profusion. *Sutherlandia frutescens* is all that your correspondent claims for it as a summer bedding plant. *J. Coultis, Kew.*

Your correspondent, Mr. H. J. Selborne, Broome, is wrong about *Sutherlandia frutescens*, the Cape Bladder Senna, and *Clianthus Dampieri*. I think he must refer to *C. puniceus*, the New Zealand Lobster-Claw. Here the latter grows freely in sheltered spots without protection, covering many a cottage front in Wicklow. As for *C. Dampieri*, the Glory Pea of Australia, that is another story; it is often confused with the New Zealand species. I have a happy memory of the gorgeous Glory Pea—a colony of seedlings planted out in a hot, somewhat dry conservatory in a Gloucestershire garden, but I have not seen it equalled since, as it is a "milky" thing, save when grafted on *Colutea arborescens*. *K. Dublin.*

SOCIETIES.

ROYAL HORTICULTURAL.

TUESDAY, NOVEMBER 30.—There were numerous large and delightful exhibits at Vincent Square on the above date, and, fortunately, there was ample room to inspect them. Heaths, Carnations, Chrysanthemums, Orchids, and Potatoes were the chief subjects shown. Four Gold Medals were awarded, an unusual circumstance for the last meeting in November.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, C. Williams, Jas. Hudson, E. A. Bowles, John Green, G. Reuther, John Heal, C. R. Fielder, W. Howe, J. F. McLeod, Thos. Stevenson, W. H. Page, H. J. Jones, Chas. Dixon, John Dickson, Arthur Turner, J. G. Bennett Poe, Chas. E. Shea, Chas. E. Pearson, H. Cowley, E. H. Jenkins, W. P. Thompson, George Paul, Reginald Cory, G. W. Leak, R. W. Wallace, W. B. Cranfield, and R. C. Notcutt.

AWARDS OF MERIT.

Carnation Laddie.—A large perpetual-flowering variety, of fine substance and good form. The colour is a bright and clear salmon-tinted pink. Shown by Mr. C. ENGELMANN.

Myosotis oblongata Bluebird.—A charming Forget-Me-Not and one eminently useful for cultivation in pots or pans for flowering in a cool house during winter. It is robust, and bears its light-blue, white-eyed flowers freely. Shown by Mr. C. ENGELMANN.

GROUPS.

Messrs. SWEET AND SON, who are among the leading plant growers for Covent Garden Market, exhibited a splendid group of superbly-grown Heaths, the kinds being *E. hyemalis*, *E. gracilis*, *E. g. nivalis* and *E. melanthera*. The last-named was represented by fine specimens about a yard high, smothered with dainty flowers. The other kinds were represented by beautiful plants in 48 sized pots and freely-flowered tiny plants in very small pots. (Gold Medal.)

Mr. C. ENGELMANN contributed a magnificent bank of finely grown Carnations. The exhibit was admirably put up, and included Mr. Engelmann's own varieties, Saffron, Jazz, Carola, Topsy, Merry Xmas, Thor, and the new Laddie. (See Awards). Beside these there were large stands of Peerless, Enchantress, Supreme, Scarlet Carola, Lady Northcliffe, Delice, Beacon, and White May Day. (Gold Medal.)

Another very fine display, and a most artistic one, was arranged across the end of the hall by Messrs. ALLWOOD BROTHERS. Black velvet was used as a background for masses of blooms of Mrs. Walter Hemus, Triumph, the vivid scarlet Edward Allwood, Wivelsfield White, Wivelsfield Apricot, Wivelsfield Beauty, and numerous others. (Gold Medal.)

Carnations in pots, well grown, were exhibited by C. CAIN, Esq. (gr. Mr. T. Pateman). The Node, Welwyn; the flowers on the plants, as well as those cut and set up in vases, were of good size. (Silver Banksian Medal.)

Messrs. STUART LOW AND CO. exhibited Carnations over a groundwork of green moss. The blooms were bright, but a trifle small; the best were Mrs. C. F. Raphael, Brilliant, White Pearl (see Fig. 130) Circe, Mrs. T. Ives. (Silver Banksian Medal.) This firm also showed some capital winter-flowering Begonias. Messrs. W. CUTBUSH AND SON contributed a small group of Carnation blooms. (Bronze Banksian Medal.)

The handsome exhibit of Chrysanthemums arranged by Messrs. KEITH LUXFORD AND CO. was greatly admired for its grouping of noble blooms of Helen Margerison, Norman Chittenden, Golden Champion, Teresa, Nadine, and Mrs. H. E. Dixon. (Silver-Gilt Banksian Medal.) Messrs. W. J. GODFREY AND SON showed decorative and single Chrysanthemums; Lady Astor and Bronze Molly were conspicuous among the latter. Chrysanthemums were extensively shown by Messrs. W. WELLS AND CO., who had fine examples of the white, incurved Percy A.

Dove, Louisa Pockett, Peace, and Viscountess Chinda. December Gold was also well shown, and single varieties were used among the others. (Silver-Gilt Banksian Medal.)

Very bright and cheering were the Anemones shown by Messrs. REAMSBOTTOM AND CO. Mr. J. J. KETTLE made his usual contribution of Mrs. Lloyd George Violets, and Mr. G. REUTHE exhibited specimens of very many interesting and rare Conifers, some bearing cones. (Silver Banksian Medal.) Mr. L. R. RUSSELL showed a few Indian Azaleas. (Bronze Banksian Medal.) Mr. J. MACDONALD showed his lawn grass and a collection of ornamental Grasses. (Silver Flora Medal.) Sir H. LEON (gr. Mr. Field), Bletchley Park, Bucks, was awarded a Cultural Certificate for a specimen of *Nepenthes rufescens* carrying nine pitchers.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), C. J. Lucas, R. A. Rolfe, R. Brooman-White, Walter Cobb, Arthur Dye, S. W. Flory, Chas. H. Curtis, J. E. Shill, H. G. Alexander, W. H. Hatcher, E. R. Ashton, T. Armstrong, A. McBean, Pania Ralli, J. Wilson Potter, Stuart H. Low, and Fred K. Sanders.

Awards.

FIRST-CLASS CERTIFICATES.

Odontioda Jupiter, Pitt's variety (*Oda. Coronation* × *Odin. eximillus*) from H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). A charming flower of model shape, coloured bright ruby red, with a slight white margin and white front to the lip.

Cypripedium Forest King (*Desdemona* × *Bekmannii*), from H. T. PITT, Esq. A large flower of fine shape and substance. The white dorsal sepal is pale green at the base and bears spotted, purple lines. The large lip is honey-yellow coloured, tinged with chocolate.

Cypripedium Memoria F. M. Ogilvie, *Chardwar variety* (*Carlmanni* × *Pyramus*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. One of the largest and best of its class. The dorsal sepal is broader than long, pure white, with the middle bright mauve-purple. The petals and lip are pale yellow tinged and spotted with chocolate-red.

AWARDS OF MERIT.

Cypripedium Warrior (*Alcibiades Illustris* × *Lord Wolmer*, *Duke of Marlborough*), from Messrs. SANDERS, St. Albans. A noble flower and one of the best of its section, the large dorsal sepal being three and a half inches across and the petals nearly two inches. The dorsal sepal is white, with very dark claret blotching. The petals and lip are yellow, the petals being chocolate-red on the upper half and spotted with the same colour on the lower. The large yellow lip is tinged with purple on the face.

Cypripedium Bacchus (*Nydia* × *Earl of Tankerville*), from Sir GEO. L. HOLFORD, Westons, Tetbury. A flower of good shape. The dorsal sepal white, with blackish, claret-blotched lines; the petals and lip yellow, marked with purple.

Odontoglossum Rosina magnificum (*eximium* × *Lakiniac*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). A flower of rich claret colour, with white lines and white margin.

Brasso-Laelio-Cattleya Cissie (*L.-C. Myra* × *B.-C. Mrs. J. Leemann*), from Messrs. J. and A. McBean, Cooksbridge. A very worthy addition to the famous B.-L. C. The Baroness class, which it resembles. The flowers are bright chrome yellow, with rose markings on the front of the lip.

Sophro-Laelio-Cattleya Forma (*S.-L.-C. Niohe* × *L.-C. Haroldiana*), from A. J. HOLLINGTON, Esq., Forty Hill, Enfield (gr. Mr. May). Flower resembling a Laelio-Cattleya; rosy-mauve, with handsome, deep ruby-red lip.

GROUPS.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Gold Medal for a very extensive group of good hybrids and species, the

back being of five plants of the favourite *Oncidium varicosum*, and other *Oncidiums* and *Dendrobiums*. The frontage was fifty feet, and in the space were arranged a fine selection of hybrid *Cattleyas*, *Laelio-Cattleyas*, and *Brassavola* and *Sophranitis* crosses, with *Odontoglossums* and *Odontiodas*.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for an excellent group of handsome *Odontoglossums*, *Odontiodas* and *Cypripediums*, with several rare species and hybrids not yet recorded.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a fine group of hybrids, specially noteworthy being *Cypripedium Christopher bisepala*, a remarkable form in which the lower sepal is larger than the upper, and white. The variety is said to be constant. *C. Nysa* (*Arthurianum* × *Gloria Mundi*), a very neat flower of good size; *C. Georgius Rex*, a stately bloom; and some new forms of *Odontoglossums* and *Odontiodas*.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for an effective group of good *Cypripediums*, *Odontoglossums* and *Odontiodas*, with some interesting species including *Arachnanthe Clarkei*.

OTHER EXHIBITS.

E. R. ASHTON, Esq., Broadlands, Camden Park (gr. Mr. H. A. Varnum) showed a selection of showy *Odontoglossums*, the best of which was *Odin. S. T. Wright* (*amabile* × *Armstrongiae*) with flowers heavily blotched with clear violet colour.

Sir GEO. L. HOLFORD showed *Cypripedium Swallow* (*Swallowtail* × *Satyr*), a good flower with pretty rose-tinted dorsal sepal.

W. R. FASEY, Esq., showed a very distinct form of *Sophro-Laelio-Cattleya His Majesty*; *Odontoglossum Redskin*, and other hybrids.

A. J. HOLLINGTON, Esq., sent various *Laelio-Cattleyas*.

Messrs. FLORY AND BLACK, Slough, showed a selection of hybrids, including the showy *Brasso-Cattleya Dr. C. G. Macdonald* (*B.-C. Hene* × *C. Peetersii*), light rose with showy labellums.

Sir H. S. LEON, Bletchley Park (gr. Mr. Field) sent a pretty salmon-tinted form of *Laelio-Cattleya Linda*, a good *L.-C. Epicasta*, and showy *Cypripediums*.

Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill) showed a noble spike of *Laelio-Cattleya Schröderae*, with seven white flowers, which have a purple lip.

Fruit and Vegetable Committee.

Present: Messrs. C. G. A. Nix (chairman), Jos. Cheal, W. Poupart, Owen Thomas, E. Beckett, P. C. M. Veitch, J. G. Weston, W. H. Divers, E. A. Banyard, W. Bates, G. F. Tinley, and J. S. Kelly.

A seedling Apple named Joy Bells was exhibited by Mr. WILL TAYLER, Sunbeams, Godalming. This is a very attractive variety of medium size and coloured a deep crimson, the shaded side showing a rich gold colour underlying the red. The flavour is very delicate and pleasing, and the flesh is tender, with a fine aroma. The Committee expressed a wish to see the tree in bearing next season.

Fruits of *Momordica cochinchinensis* were shown from the Royal Botanic Gardens, Kew. They are of a rich scarlet colour, with a prickly surface, and about the size of Coconuts. The foliage is trifid, the lobes being of large size. This climbing Cucumber from tropical Africa requires a very warm house and is suitable for training to the rafters.

Messrs. DOBBIE AND CO. were awarded a Gold Medal for an exhibit comprising 40 distinct sorts of Potatoes. The group was staged in a most attractive manner, the tubers being arranged in shallow baskets on a three-tier staging covered with black velvet, and the quality was superb. All the varieties were immune to wart disease, and included such sorts as The Bishop, Kerr's Pink, Great Scot, Arran Comrade, Climax, Golden Wonder, Victory, Resistant Snowdrop, and K. of K.

A small collection of Apples and two dishes of Pears were shown by Mrs. BARWELL, Barkfold, Billingshurst, Sussex (gr. Mr. W. Mould).

NATIONAL CHRYSANTHEMUM.

MONDAY, NOVEMBER 29.—The Floral Committee met at Essex Hall, Strand, and about a dozen new Chrysanthemums were submitted for its consideration. The following awards were made.

FIRST CLASS CERTIFICATE.

Peace.—A very large, solidly-built Japanese variety, with loosely incurving florets. The colour is light yellowish buff with a pink suffusion on the lower florets, which show a large portion of their under surface. Shown by Messrs. KEITH LUXFORD AND CO., Sheering, Harlow.

Nadine.—This large Japanese variety was exhibited on November 15, when the Committee expressed a desire to see it again. The colour is light chestnut-bronze. Shown by Messrs. KEITH LUXFORD AND CO.

Yolande.—A beautiful reflexing, golden-yellow Japanese variety of medium size. The flowers are of firm texture, suggesting that the variety will become popular with market growers; the stem is good and the foliage neat and dark. Shown by Messrs. CRAGG, HARRISON AND CRAGG, Heston, Hounslow.

KINGSTON CHRYSANTHEMUM.

The successful exhibition held in the Baths Hall, Kingston, on the 3rd ult., served as a reminder that about forty years ago Kingston held one of the finest Chrysanthemum exhibitions to be seen in this country. This year's show was the thirteenth held by the present Society, and all connected with it are to be congratulated upon the splendid display of finely-grown blooms presented to the public. It is interesting to observe that this year the Kingston Society won the challenge shield offered by the National Chrysanthemum Society for competition among its affiliated societies.

The leading class was for 18 Japanese blooms in six varieties, and the first prize included a silver trophy, presented by the tradesmen of Kingston. This trophy was won by R. S. BOND, Esq., (gr. Mr. M. S. Read), who had splendid blooms of Mrs. H. Kemp, Louise Pockett, R. C. Pulling, Mrs. J. Gibson, Gen. Pettain, and Laby Talbot; 2nd, T. H. MANN, Esq., (gr. Mr. A. Jewell) Rotherfield, Sussex, whose specimen of A. J. Tofield was the finest in the show; 3rd, Col. THOMSON (gr. Mr. D. Barnard) Eppingham. Mr. BOND showed the best six novelties of Japanese varieties, 2nd the MARQUIS OF RIPON (gr. Mr. T. Smith), Coombe Court, Kingston. For 12 Japanese blooms distinct, Mr. BOND was again a winner of the first prize with the DUCHESS OF ALBANY (gr. Mr. J. Kelly), Clarendon, Esher, 2nd, and the MARQUIS OF RIPON 3rd. Other classes in which Mr. BOND was pre-eminent were those for three white Japanese blooms, three of any other colour but white and yellow, and for six vases of single varieties. The MARQUIS OF RIPON had the best three yellow Japanese blooms, and the DUCHESS OF ALBANY the best basket of Chrysanthemums.

The best group of Chrysanthemums was arranged by F. G. WIGLEY, Esq., (gr. Mr. W. Francis), Gloucester Road, Kingston Hill, who won the silver cup given by Mr. J. Salfer Cox. The second award in this class was won by the MARQUIS OF RIPON, while MRS. ZIMMERN (gr. Mr. A. Corps), Oak Hill Drive, Surbiton, gained third place. The MARQUIS OF RIPON led for six plants of the variety *Caprice du Printemps*, and Mr. R. S. BOND showed the best three bush specimens of Chrysanthemums, as well as the best six winter-flowering Begonias, but he was beaten for six Primulas by G. C. HONGSON, Esq., (gr. Mr. H. C. Bedford), Pine Hurst, Surbiton.

The DUCHESS OF ALBANY exhibited the best four dishes of Apples, and also the best four dishes of Pears, and J. H. DUNN, Esq., (gr. Mr. W. S. Barrell), Coombe Cottage, Kingston Hill, won first prize for three bunches of black Grapes.

Local amateurs, cottagers and allotment holders all contributed capital exhibits of flowers and vegetables.

SHEFFIELD CHRYSANTHEMUM.

The revival of the Sheffield Chrysanthemum Society's Annual Show, on November 12 and 13, brings back many memories. The fine hall of the Corn Exchange was brightened by a beautiful display of Chrysanthemums and other garden produce, which recalled its November glories of pre-war days. It is six years since the last large Chrysanthemum show was held in the Cutlers' city; in 1915 there was a small show and in 1916 the society managed the exhibition of garden produce which the Allotment Committee of the City Council promoted. Then it abandoned flowers and devoted its energies to the encouragement of food production. It has now returned to its normal activities, though not yet on its normal scale.

One of the members of the original Committee of 1885 survives in the person of Councillor J. G. Newsham, who presided at the opening ceremony performed by the Lord Mayor of Sheffield (Alderman W. F. Wardley), and at which there was a large attendance.

The show attracted about 300 entries, which is not much more than one-third of the pre-war number, but the quality of the exhibits was up to as high a standard as ever. The open classes did not contain many entries from outside the city, but the display provided by the local growers was an admirable one and better than the average. Single Chrysanthemums were especially good. Fruit and vegetables were also admirable. The district and amateur sections also call for favourable comment, and the latter included for the first time a class for ladies only.

Messrs. KEITH LUXFORD, H. WOOLMAN, SEAGRAVE AND CO., BROOK BRAY, LTD., BIRCH AND CO., J. IRVINE, and J. R. TOOLEY, put up splendid exhibits of their specialities, which were greatly admired by the 7,000 visitors who patronised the show.

FINCHLEY CHRYSANTHEMUM.

One of the finest exhibitions ever organised by the Finchley Chrysanthemum Society was held recently in St. Paul's Hall, Church End. There were 130 entries and several silver cups were offered for competition. The majority of the blooms exhibited were of fine size and colour; while there was also a capital display in the decorative classes and in the section for fruits. The exhibition was opened by Edwin Fox, Esq., and the ceremony was presided over by J. J. Ward, Esq., the enthusiastic president of the Finchley Society.

In the section for Japanese varieties, the best four vases were shown by R. W. JAY, Esq. (gr. Mr. C. Carey), Old Southgate; 2nd, Mr. W. CARPENTER (a Finchley amateur); 3rd, Miss WYBURN (gr. Mr. A. Jones), Hadley Manor, Barnet. In the single vase classes, Miss WYBURN, R. W. JAY, Esq., and Mr. B. CARPENTER were the most successful competitors. R. W. JAY, Esq., won first prize for two vases of single Chrysanthemums, disbudded, and also for a vase of twelve sprays of a single Chrysanthemum. Miss WYBURN was successful in a class for two vases of decorative Chrysanthemums; 2nd, J. J. WARD, Esq. (gr. Mr. J. Salter), Rocklands, Finchley. Miss WYBURN was also successful in the class for one vase of decorative Chrysanthemums and for one vase of Anemone varieties, with J. J. WARD, Esq., second in each case.

In the decorative section, Mrs. A. L. BURKE won first prize for a table decorated with Chrysanthemums, and a similar honour for a bowl of Chrysanthemums. Miss WYBURN was the most successful exhibitor of both black and white Grapes. Mr. J. CULDS won the principal awards for dessert and culinary Apples. Local amateurs' and cottagers' classes produced a capital competition and the exhibits gave evidence of first-rate cultivation.

READING AND DISTRICT GARDENERS.

At the recent meeting held in the Club Room, Abbey Hall, Mr. F. Townsend, presided over a large attendance of members. The subject for the evening was "A Chat on Apples—Summer Pruning—Merits of Various Varieties, and the Failure of Crops in 1920." This was introduced

in a very able and practical manner by Mr. W. Chislett, The Gardens, Bill Hill, Wokingham. With regard to early summer pruning, he advocated pinching instead of cutting with the knife. He was greatly in favour of and strongly advised the "extension principle" of Apple growing. This led to a very animated and interesting discussion, sustained by the lecturer and Messrs. Townsend, Fulker, Alexander, Butcher, Carter, Cook, H. G. Cox, Howlett, Reeves, Church, Scragg, E. Cox, Lloyd, Loader, Moulton, F. Cox, Smith, and Martin.

In the competition for five fruits of Cox's Orange Pippin Apple the prizes were awarded as follows:—1st, Mr. F. GOODGER, Calcot; 2nd, Mr. H. C. LOADER, The Gardens, Erleigh Park; 3rd, Mr. F. TOWNSEND, The Gardens, Hillside.

Among non-competitive exhibits Mr. H. G. Cox, 80, Hamilton Road, was awarded a first-class certificate for fine blooms of R. C. Pullen and Francis Jolliffe Chrysanthemums, and Mr. G. TOVEY, The Gardens, Leighton Park, an Award of Merit for six vases of the new decorative Chrysanthemum, Edith Cavell. Mr. H. C. HOWLETT, Earley, exhibited six dishes of Apples.

BRITISH CARNATION.

WEDNESDAY, DECEMBER 1.—The officers and Committee of this society are to be congratulated upon the success of their winter exhibition, held on a cool, bright day in the Royal Horticultural Hall. The flowers were wonderfully fine, and the competition was keener than usual, especially in the amateurs' sections.

New Varieties.

AWARDS OF MERIT.

White Pearl.—Pure white, large, fragrant; 85 points out of a possible 100. Shown by Messrs. STUART LOW AND CO.

Jeannie.—Deep blush-pink, fair size, broad petalled; 76 points. Shown by Mr. N. W. VANDERWEYDEN, March.

Cupid.—Salmon-pink, a trifle dull as the flowers become fully open; 76 points. Shown by Mr. C. ENGELMANN.

Saffron.—Clear yellow, with occasional edging of white on the broad petals; 76 points. Shown by Mr. C. ENGELMANN.

Lady Inverforth.—A big salmon-cerise variety, full and broad petalled; 77 points. Shown by Messrs. STUART LOW AND CO.

Laddie.—A superb, large American-raised salmon-pink variety of excellent form; 81 points. Shown by Messrs. STUART LOW AND CO.

Wivelsfield Apricot.—A distinct variety of a pleasing shade of apricot, with a little heliotrope flaking; flowers of fair size and good substance. Shown by Messrs. ALLWOOD BROTHERS, Wivelsfield, Haywards Heath.

OPEN COMPETITIVE CLASSES.

The Silver-Gilt Challenge Cup, presented by Mr. George Monro, as first prize for a dozen vases of Carnations, distinct varieties, twenty-five blooms of each, was won by Mr. C. ENGELMANN, with lovely blooms of *Laddie*, *Carola*, *Dolly*, *Ethel Fisher*, *Sunstar*, *White Wonder*, *Merry Xmas*, *Saffron*, *Circe*, *Cupid*, *Bona* and *White Enchantress*—a very fine exhibit; 2nd, NEWPORT CARNATION NURSERIES, Newport, Essex; 3rd, Messrs. MENPES FRUIT FARM, Purley, Reading.

Mr. C. ENGELMANN won the Brunton Cup for three vases of British novelties, with the pink *Cupid*, salmon *Bona*, and scarlet *Thor*. The same exhibitor was also first-prize winner in the class for three vases of American novelties, with *Crystal White*, the light, salmon-pink *Laddie*, and the rosy pink *Ruth Barr*.

In the class for a vase of not fewer than 100 blooms of one variety, Mr. ENGELMANN led with his new *Tarzan*, a splendid scarlet variety; 2nd, Mrs. G. WEST, Datchett, with *Nora West*; 3rd, Mr. THOMAS PAGE, Hampton, with the pink *Tom Page*. Mr. ENGELMANN also secured a honorary 2nd prize in this class, for a grand vase of *Lady Northcliffe*. The best vase of a British-raised variety was *Dora*, shown by Mr.

ENGELMANN; who was also 2nd prize winner with Blush, a charming variety; 3rd. Messrs. S. Low and Co., with White Pearl. For twenty-five blooms of a white Carnation; Mr. ENGELMANN was placed 1st with Crystal White, in fine form; 2nd, NEWPORT CARNATION NURSERIES, with White Wonder. For a rose-pink variety, Mr. ENGELMANN again led, with Delice; 2nd, NEWPORT CARNATION NURSERIES. The best salmon-pink variety, 25 blooms, was Laddie, finely shown by Mr. ENGELMANN; 2nd, Mr. G. WEST; 3rd, NEWPORT CARNATION NURSERIES. For a crimson variety, similar conditions, E. WORMALD, Esq., led with Carola; 2nd, Mr. ENGELMANN; 3rd, Mr. A. G. POINTING, Biphham, Sussex. In the class for a scarlet variety, Mr. ENGELMANN led with Thor; 2nd, Lt.-Col. Sir R. BAKER (gr. Mr. Usher), Kanston Blandford; 3rd, Mr. A. J. POINTING.

Mrs. A. LIPPMAN SYMONS was awarded the first prize for a basket of Carnations, consisting of Carola, associated with Asparagus, Ivy and Berberis foliage; 2nd, Messrs. R. F. FELTON AND SON, Hanover Square, with a bold and handsome arrangement of Mrs. Walter Hemus. Messrs. FELTON secured 1st prize for a bouquet of Carnations.

AMATEURS' CLASSES.

First prize for a group of Carnations in pots, was won by C. A. CAIN, Esq. (gr. Mr. T. Pate-man). The Node, Welwyn, with plants carrying numerous blooms; 2nd, Mrs. A. LIPPMAN SYMONS, Marden, Kent.

In other classes for plants in pots Mrs. E. PALMER, Sheffield-on-Lodden, and E. WORMALD, Esq. (gr. Mr. R. Lay), Potters Bar, were the leading prize-winners.

Sir RANDOLF BAKER led in the class for a collection of cut Carnations, with a handsome group in which Saffron, Circe and White Wonder were conspicuous; 2nd Mrs. W. RAPHAEL; 3rd Mrs. E. PALMER.

Competition was quite good in the amateurs' classes where three flowers of a variety were required. Sir R. BAKER led for a white sort with White Wonder; Mrs. A. LIPPMAN SYMONS, for a salmon-pink variety with Salmon Enchantress; Sir R. BAKER for a pink variety with magnificent blooms of Pink Sensation; Mrs. LIPPMAN SYMONS for a crimson, with Carola; Mrs. W. RAPHAEL for a scarlet, with Brilliant; Sir R. BAKER for a yellow, with Saffron; and for a fancy variety, with Benora.

In other classes, for amateurs only, the leading prize-winners were Mr. E. W. BISHOP, St. Leonard Road, Windsor; Mr. J. W. DRAKE, Shaftesbury, Mr. W. G. OAKLEY, Luton; and Mr. H. BLAKE, Alverstoke.

NON-COMPETITIVE EXHIBITS.

Many of the groups shown at the R.H.S. meeting of the previous day were left over for this occasion and they added very materially to the extent, beauty and interest of the exhibition. As these were described in our R.H.S. report (see p. 280) we have now only to give the names of the exhibitors. Awards were made only in favour of exhibits of Carnations.

Mr. C. ENGELMANN, Saffron Walden, Carnations. (Large Gold Medal.) Messrs. ALLWOOD Bros., Haywards Heath, Carnations. (Large Gold Medal.) Messrs. WM. CUTBUSH BROS., Highgate, Carnations. (Silver Medal.) Messrs. STUART LOW AND CO., Enfield, Carnations and Orchids. (Silver Gilt Medal.)

Messrs. SWEET AND SON, Whetstone, Heaths and Cinerarias; Messrs. W. WELLS AND CO., Mersham, Chrysanthemums. Messrs. KEITH LUNFORD AND CO., Sheering, Harlow, Chrysanthemums. Messrs. W. J. GODFREY AND SON, Exmouth, Chrysanthemums.

TRADE NOTES.

By the terms of an order recently made by the Department of Agriculture and Technical Instruction for Ireland, which came into operation on the 15th ult., no Potatoes may be imported into Ireland from any country except under licence to be obtained by the consignee in Ireland. Every consignment of Potatoes imported

must be accompanied by a declaration of the sender in a prescribed form. Forms of application for licences and forms of declaration can be obtained on application to the Department at Upper Merrion Street, Dublin.

The catalogue of Messrs. Haage and Schmidt, of Erfurt, among other novelties, describes a new race of hybrid Pentstemons (*P. hybridus Graciella*), of varied flower, colour and graceful habit. The advantage claimed for this new race is its late flowering, which only ceases with the autumnal frosts. Plants raised from seed in gentle heat in February or March flower in September of the same year, and others wintered in the open begin to blossom in June and continue throughout the whole season.

Obituary.

Thomas Bannerman.—It is with deep regret we learn of the death of Mr. Thomas Bannerman, who for over sixty years was gardener to Lord Bagot, Blithfield Hall, Rugeley, Staffordshire. Mr. Bannerman was a clever cultivator of Grapes, and for a long series of years he was a successful exhibitor of these fruits throughout the Midlands. He served his apprenticeship at Dunrobin Castle, and afterwards worked at Trentham Hall under the late Mr. Fleming. He was only 21 years of age



THE LATE THOMAS BANNERMAN.

when he went to Blithfield. Mr. Bannerman was a first rate all-round gardener, and an account of the work he had accomplished at Blithfield appeared in *Gardeners' Chronicle*, July 14, 1877, accompanied by the portrait now reproduced. It is of interest to record that the previous gardener at Blithfield occupied the position for over 50 years, and the fact that there have been but two head gardeners at Blithfield during a period of 110 years would appear to establish a record.

George Brooks.—The funeral took place on the 19th ult. of George Brooks, aged 86, who was employed on the Cliveden estate for seventy-four years under four owners, the last being Viscount Astor. He occupied the same cottage for sixty-three years, and worked up to a day or so before he died. Viscountess Astor sent a wreath inscribed, "With greatest respect for our faithful employee."

John Gray.—We learn that Mr. John Gray, who was gardener to Mr. and Mrs. John W. McConnel, at Wellbank, Prestwick, Manchester, for 35 years, died suddenly of heart failure on the 20th ult.

ANSWERS TO CORRESPONDENTS.

GARDENERS AND UNEMPLOYMENT ACT: *A. N. and W. J. W.* We understand that workers engaged in horticulture and farming, as well as other branches of husbandry, do not come within the scope of the Unemployment Act, which came into force on the 8th ult. You can obtain a copy of the Act from His Majesty's Stationery Office, Kingsway, W.C.2.

GRUBS ATTACKING CYCLAMENS. *T. N.* The grub attacking your Cyclamen corms is the larvae of beetle-like weevil; it is impossible to identify the adult from the larva. Presumably the attacked plants are grown in pots. If so, they should be repotted, if culturally possible, and the grubs picked out. A watch should be kept in the spring of the year for weevils on the foliage of plants inside the house. Their host plants should then be sprayed with lead arsenate to prevent egg laying for the following season.

HORTICULTURAL BOOKSELLER: *G. E. W.* We are of opinion that it would not be possible for you to build up a satisfactory business solely by the sale of horticultural books. Anyone starting such a business would need a large amount of capital and a vast amount of experience of horticultural and botanical books.

NAMES OF PLANTS: *W. C.* *Salvia Horminum*. *Country Cottage*. *Cotoneaster Simonsii*. This shrub may be raised easily from seeds sown in the spring, or by means of cuttings inserted in sandy soil out of doors during the autumn. Layers also root readily, and offer an easy means of propagation if only a few plants are required.—*J. R.* *Lactuca* sp.; the species cannot be determined in the absence of flowers. It is probably an introduced weed.

NAMES OF FRUITS.—*J. T. M.* Orange Pippin.—*E. M. S.* 1, Hambledon Deux Ans; 2, Calville St. Sauveur.—*W. H. S.* Pine Apple Russet.—*G. R.* 1, Lane's Prince Albert; 2, Fair Maid of Taunton; 3, Sam Young; 4, Nancy Jackson; 5, Round Winter Nonsuch; 6, Lady's Finger of Lancaster; 7, Bess Pool; 8, Duke of Devonshire; 9, Beurré de Jonghe.—*C. G.* Scarlet Golden Pippin.

NARCISSUS PSEUDO-NARCISSUS: *R. D. T.* If reference is made to the typical plant rather than to its many varieties it is probable that overcrowding and lack of moisture are the chief causes of non-success. If this deduction is correct no application of "food"—by which we assume you mean organic manures or other stimulants—is likely to prove of benefit. In nature the plant revels in cool moist soils, and in gardens is rarely happy for long if these conditions are absent. If your soil conditions approximate to these then overcrowding is responsible for the non-flowering of the plants. If this be so a further decline is inevitable. The remedy in such case lies in lifting, separating and replanting the bulbs singly. This could best be done at the time of the maturing of the growth, in June or early July. The best fertiliser to apply now would be liquid manure; drainings from a stable or cowshed. Copious applications of this twice weekly from now till March would assist growth materially.

SCOTS FIR ATTACKED BY INSECTS: *T. S.* The Scots Fir is affected with the Aphid *Chermes pini*. It is a fairly common pest of Pines which are not in a satisfactory cultural condition. They also attack this Pine in nurseries when the plants are unhealthy. Spraying could be resorted to in the case of young plants, but all that can be done with old trees is to see that the cultural conditions are satisfactory, e.g. that they are not unduly crowded by neighbours.

Communications Received.—*J. B.—S. A.—H. Y.—C. W.—W. A.—B. T.—J. K. B.—C. J. W.—R. T.—A. S.—E. T. E.—J. C.—C. H. P.—J. H. W.—W. R. A.—H. D.—E. S.*

THE Gardeners' Chronicle

No. 1772.—SATURDAY, DEC. 11, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.3°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, December 8, 10 a.m.: Bar. 30.2, temp. 40.2°. Weather—Foggy.

Horticulturists will learn with deep regret of the death of Mr. Spencer Pickering, F.R.S., which occurred on the 5th inst., at the Granary, Harpenden. Percival Spencer Umfreville Pickering was born in 1858, and after achieving distinction as an investigator in chemical and physical science, turned his attention some twenty years ago to the experimental study of fruit trees. This change of occupation, which proved so fortunate to the advancement of scientific horticulture, was originally dictated by considerations of health. Mr. Pickering accordingly settled at Harpenden, and became, as he phrased it, a small cultivator. Not long after he had embarked on this new career, there occurred between him and the Duke of Bedford that happy association which led to the latter establishing the Woburn Fruit Farm and Experiment Station. With the utmost ardour Spencer Pickering threw himself into the work of planting and investigating. The results of this work were numerous and valuable, and some of the most important were often criticised adversely; for example, that on the deleterious effects of grass on the growth of fruit trees, and also on planting fruit trees by ramming.

Time, however, has shown that Spencer Pickering's conclusions from his experiments are in the main sound, and at the present time few will be found to deny that young fruit trees should not be planted in grass-land, or that firm planting to the extent even

of ramming soil about the roots, is an essential part of good practice in fruit-growing. An extension of his work on the effect of grass on the development of fruit trees, led Spencer Pickering to the conclusion that the roots of plants generally exercise a toxic action on other roots in their neighbourhood. Inasmuch, however, as the toxic substance, or substances, excreted by roots are readily washed away, their deleterious influence generally escapes observation. In conformity with this view, Pickering concluded that the insistence on good drainage is based, albeit unconsciously, not only on the need for regulating the supply of water received by the roots of a plant, but also on the importance of ridding the soil quickly of the toxic substances which all roots produce.

Mr. Pickering also used his skill and knowledge as a chemist for effecting improvements in the preparation of fungicides and insecticides. He devoted considerable attention to determining the proper strength at which Bordeaux mixture should be used, and the



THE LATE PERCIVAL SPENCER U. PICKERING, F.R.S.

preparation made by him at Woburn was certainly among the best on the market. The present writer is glad to remember that at his suggestion Spencer Pickering collected the numerous and valuable observations recorded in the *Woburn Reports*, and published them as a connected story under the title of *Science and Fruit Growing*.

No one who peruses the pages of that book will deny to Mr. Spencer Pickering a tribute of gratitude and admiration, not only for the valuable results which he achieved, but for the indomitable manner in which for upwards of twenty years, and despite ill-health, he pursued his inquiries, striving always, and often with conspicuous success, to link science and practice together for their mutual benefit.

Havoc of the Gale.—The disastrous storms of the present week have been responsible for much damage to trees in different parts of the country. In the grounds of Crombie water works, belonging to the Corporation of Dundee, no fewer than five thousand trees were uprooted by the storm on the 6th inst., and damage estimated at £3,000 was done there.

Legacy to a Gardener.—Under the will of the late J. H. Straker, Esq., of Howden Dene, Corbridge-on-Tyne, who was killed in the hunting field, Mr. Jas. Winder, who has been gardener at Howden Dene for upwards of 25 years, receives two years' wages.

Our Almanac.—We shall publish in an early issue of the New Year a "Gardeners' Chronicle" Almanac for the year 1921. In order to make it as useful as possible for reference, we shall be obliged if secretaries of Horticultural, Botanical and Allied Societies, or any of our correspondents, will send us IMMEDIATE INFORMATION of all fixtures for the coming year.

Garden Pictures at the "Englishwoman" Exhibition.—The Exhibition of Women's Work, held at the Central Hall, Westminster, from the 10th to 20th of last month, under the auspices of the *Englishwoman* magazine, was full of interest to all who love beautiful things and admire dainty handiwork. To gardeners, however, the exhibit of chief interest was the little group of paintings by Miss M. Aumônier, showing gardens in sun and shade, and accompanied by verses of her own composition. Miss Aumônier is more than a lover of gardens—she almost worships the green of the grass and the tremulous glory of sunlit leaves; and she is able at least in some measure to convey an impression of her intense feeling to those whose gardens she depicts. We noticed many familiar scenes, among others a delightful little corner of an orchard at Ascot, with masses of Tulips naturalised under the trees—a charming idea, artistically portrayed. It was a little disappointing to find no exhibit from any women's horticultural college or school; all the handicrafts represented were "indoor" occupations such as weaving and dyeing, and metal and leather work. Perhaps another year this deficiency will be made good.

Further Honour for Sir Harry J. Veitch.—In our issue of February 21, 1920, we were able to announce that the King of the Belgians had bestowed upon Sir Harry J. Veitch the Cross of Officier de l'Ordre de la Couronne, in recognition of the valuable services he had rendered to Belgium in connection with the War Horticultural Relief Fund. We now have the very great pleasure of informing our readers that the Cross of Chevalier of the Legion of Honour has been awarded to Sir Harry J. Veitch in recognition of services rendered to the devastated regions of France. The following letter has been received by Sir Harry Veitch from the French Embassy:—

November 3, 1920.
French Embassy,
London.

Sir,—I am pleased to inform you that the President of the Republic has conferred upon you the cross of Chevalier of the Legion of Honour.

The French Government has granted you this distinction in recognition of the services that you have rendered to the devastated regions of France. I have the honour to send you the Decoration and the Brevet of Appointment.

I beg you to receive the assurance of my high consideration.

(Signed) PAUL CAMDON.

International Potato Conference in 1921.—In view of the fact that, with the exception of cereals, Potatoes now form the most important food crop grown in Europe and North America, and because, wherever the Potato is grown, difficulties both with regard to its cultivation and to the breeding problems connected with it are constantly arising, it has been felt that the time has come when an International Conference can usefully discuss Potato problems. The Royal Horticultural Society, acting in conjunction with the Ministry of Agriculture, has, therefore, decided to hold such a Conference on November 16, 17 and 18, 1921. The Conference will take place at the R.H.S. Hall at Vincent Square, and an exhibition of Potatoes will be held at the same time. A committee has been formed under the chairmanship of Lord Lambourne, with Sir Daniel Hall as vice-chairman, consisting of Mr. W. Cuthbertson, Mr. W. G. Lobjoit, Mr. Arthur W. Sutton, Mr. P. G. Dalling, Mr. C. G. A. Nix, Mr. A. D. Cotton, and Mr. F. J. Chittenden, with Mr. H. V. Taylor and Mr. W. R. Dykes as joint honorary secretaries. The first meeting of the committee took place on Tuesday, November 30, when it was suggested that the National Potato Society should be invited to hold its annual show in conjunction with the exhibi-

tion in connection with the Conference. It was also decided that the chief topics to be discussed at the Conference should be (1) The industrial and commercial uses of the Potato; (2) Potato diseases; (3) Seed production and the breeding of new varieties. The preparation of the programme of the Conference, and the arrangement of the papers to be read, were left to a sub-committee consisting of Messrs. Chittenden and Cotton, with the honorary secretaries. Invitations to foreign delegates to attend the Conference will shortly be sent out, and the United States Department of Agriculture has already agreed to send delegates to the Conference and to make an exhibit of American varieties. All communications should be addressed to the Joint Secretaries, c.o. The Royal Horticultural Society, Vincent Square, London, S.W.1.

Royal Society Medals.—Of the recipients of medals awarded by the Royal Society for distinction in research, no fewer than three have pursued their investigations in botanical subjects. Dr. Horace Brain, who receives the Copley Medal, has, beside his distinguished work in fermentations, advanced our knowledge of the processes whereby plants, making use of the radiant energy of sunlight, manufacture sugars from carbon dioxide and water. He has also, in a beautiful series of investigations, estimated the efficiency of the green plant as a manufacturing machine. Dr. William Bateson, who receives a Royal Medal, is known to all horticulturists for his researches in Genetics. As director of the John Innes Horticultural Institution he has set an example to the world of the methods which must be employed in order to establish plant breeding on a scientific basis. Horticulturists all the world over will desire to congratulate him on the honour which he has received. Professor Biffin, who is the Darwin medallist, has put into practice with conspicuously successful results the Mendelian methods of plant breeding which Bateson has done so much to illuminate, and by his experiments with cereals, and Wheat in particular, has given to the farmer new races of Wheat of proved value.

Exportation of Gooseberry and Currant Bushes to Jersey.—The Jersey authorities have made certain regulations with respect to the importation of Gooseberry and Currant Bushes into that island, and nurserymen should remember that such bushes and any cuttings of the same imported into Jersey must be accompanied by a sworn declaration by the consignor to the effect that American Gooseberry mildew is not present on the premises (which must be stated) where the bushes or cuttings were grown; and also by a certificate, issued by the Ministry of Agriculture and Fisheries in respect of bushes grown in England or Wales, that American Gooseberry mildew has not been reported as existing on the premises where the bushes were cultivated during the previous growing season. Persons wishing to export Gooseberry or Currant bushes from England or Wales to Jersey, and who are in a position to make the declaration referred to above, should apply to the Ministry for the issue of the necessary certificate for which a small fee will be chargeable.

Potato Crops in 1920.—During the present year Potatoes were planted late, as a rule, owing to the unfavourable weather of April, and the crop did not develop well on heavy land during the cold, sunless summer. The tubers are, therefore, small in many districts and yields were reduced appreciably by disease in the south-west. According to the Ministry of Agriculture the yield per acre over the whole of England and Wales is estimated at 5.8 tons, which is two-fifths of a ton below the average of the 10 years 1910-19, and practically the same as last year. Generally speaking crops were somewhat above the average in the eastern half of the country, but considerably below in the west; the yield in the south-western counties being estimated at only 3.8 tons per acre, whilst in Lancashire only two-thirds of an average crop was obtained. Owing to the large area, however, the total production, 3,137,000 tons, is 400,000 tons greater than in 1919, and apart from 1917 and 1918, is

the largest recorded since these returns were first collected in 1885.

Potatoes in Part Payment of Minimum Wages.—At a recent meeting of the Agricultural Wages Board, a report was presented by the Committee on "Allowances," dealing, *inter alia*, with the revision of the values which had been determined in 1918 as those at which the provision of Potatoes as a "benefit or advantage" might be received for the purpose of part payment of minimum wages in lieu of payment in cash. Recommendations had been received from the District Wages Committee in regard to the matter, and after consideration of these the "Allowances" Committee recommended that in future no distinction should be made between Potatoes of different varieties, and that a scale of values should be adopted, varying in different areas from £6 to £10 per ton, according to the determinations of the District Committees. The Board adopted the Committee's report.

Gift of a Public Park to Reigate.—At the recent meeting of the Reigate Corporation it was announced that Mr. and Mrs. Randal-Vogan, who are prominent residents in Reigate, had entered into negotiations for the acquisition of Reigate Park for the purpose of presenting it to the town as an open space. The park consists of about 150 acres in a more or less wild condition, through which there have been public rights of way for a long period. When the park becomes the property of the corporation, the public will have free access to every part of it, but no alteration of any kind is anticipated as it is agreed the park should be left in its beautiful natural condition. Reigate Park is a part of the estate of Reigate Priory, which for many years has been the home of Lady Henry Somerset. The part which Mr. and Mrs. Randal-Vogan are presenting to the town will cost them about £15,000; it is thickly wooded and includes a ridge about 400 feet high, which commands magnificent views of charming Surrey scenery.

The Garden of Gethsemane.—In our issue of December 22, 1917, we published an account, with an illustration of the Garden of Gethsemane as it is at present laid out and enclosed. The authenticity of the site is in a measure confirmed by recent excavations, which have revealed the remains of ancient churches, thus showing that the site has for long been regarded as a place of veneration. The garden is in the hands of the Franciscans, who in the course of digging the foundations for a new chapel came across the remains, first, of a medieval church, and, later, of a fourth-century church, of which it has been possible to make out the whole of the original design, while added interest has been afforded by the discovery of some of the original mosaic pavements.

Expenditure on Cut Flowers in America.—It has been estimated that 45,000,000 dollars are spent on cut flowers every year in the United States of America. American florists are dissatisfied, however, because they find 50,000,000 dollars are spent on chewing gum during a similar period.

Agriculture and the Unemployment Insurance Act.—Efforts are being made to bring workers in agriculture within the scope of the Unemployment Insurance Act of 1920, and a motion to give effect to these efforts was moved at the December meeting of the Agricultural Wages Board by Mr. Dallas. After considerable discussion the Board decided to set up a committee to inquire into, and report on, the extent to which the Act might be made applicable and beneficial to agricultural workers.

Germination of *Lonicera Hildebrandtii*.—Under date of December 4, Lord Lambourne writes from Bishop's Hall, Romford:—"Following your remarks about the seed of *Lonicera Hildebrandtii* a few weeks ago (see p. 220, *Gard. Chron.*, October 30), on November 9 I found one seed on an old plant that flowered a good deal this year, and has been grown in a cold house for about eight or ten years. It was sown green and soft on November 9, in loam, leaf-soil and sand, only just covered with soil that was previously damped. The seed was sown in a small plot plunged in leaf-soil

in a bigger pot, and then placed on the hot-water pipes. The first sign of germination was noticed on November 22; the seedling was nicely up by November 23; the seed leaf is now released, and the seedling about an inch high. If it is of any interest I shall be glad to let you know how it gets on." We hope Lord Lambourne will let us know how his seedling progresses.

Appointments for the Ensuing Week.—Monday, December 13: National Chrysanthemum Society, Floral Committee Meeting at Essex Hall, Strand, at 3 p.m.; Executive Committee Meeting at the offices of the British Florists Federation, 35, Wellington Street, Covent Garden, at 6 p.m.; United Horticultural Benefit and Provident Society's Committee meeting. Tuesday, December 14: Royal Horticultural Society's committee meetings.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Benthamia fragifera*.—It is stated, in the last report of the meeting of the Horticultural Society, respecting this shrub, "that though it will grow out of doors, yet it required the aid of a greenhouse to grow it to anything like perfection." I feel anxious that this should not be stated without qualification. It grows and flowers and fruits abundantly at many places in this country; and this year does not seem to have been affected by the severe weather of last March, when, on one or two nights, the thermometer stood at 15° at this place, and at 16° at Sir Charles Lemon's. It is true that we escaped the severe trial of February, when the thermometer stood below zero at Chiswick; for, on the severest of those nights, it did not fall here below 29°. I think I have heard that the *Benthamia* grows in the open air, at Belsay Castle, in Northumberland. My impression is that if it is sheltered from wind and has a favourable situation, it will flourish in many counties of England; on the contrary, in the draught of a cold valley, I know, by experience, it will not flourish in the western part of Devonshire. The parent plant here, which has grown from seed sent from Nepal, is now 21 or 22 feet in height, and 20 inches in circumference at 3 feet from the ground, and 18 inches at 6 feet. *J. H. Tremayne, Heligan.*—*Gard. Chron.*, December 13, 1845.

Publications Received.—*The Garden Doctor*. By F. J. Chittenden, V.M.H. London: Country Life Library, Tavistock Street, W.C. Price, 7s. 6d. net. *A Textbook of Plant Biology*. By W. Neilson Jones and M. C. Rayner: Methuen and Co., Ltd., 36, Essex Street, W.C. Price 7s. *Cultivation with Movable Frames*. By Herbert Cowley: Country Life, Ltd., 20, Tavistock Street, W.C.2. Price 9d. net. *The Culture of the Chrysanthemum*. By W. Wells: Country Life, Ltd., 20, Tavistock Street, W.C.2. Price 2s. 6d. net. *A Handbook of Hardy Fruits*. By E. A. Bunyard: John Murray, London. Price 7s. 6d. net. *The Perpetual Flowering Carnation*. By Montagu C. Allwood, F.R.H.S.: The Cable Printing and Publishing Co., Ltd., Hatton House, Great Queen Street, W.C. New edition 3s., post free. *Grain Sorghums: How to grow them*. By Benton E. Rothgehe: Farmers' Bulletin 1,137, United States Department of Agriculture. *Varietal Experiments with Spring Wheat on the Northern Great Plains*. By J. Allen Clark, John H. Martin and Ralph W. Smith: United States Department of Agriculture, Bulletin No. 878, Government Printing Office, Washington. *Diseases of Apples in Storage*. By Charles Brooks, J. S. Cooley and D. F. Fisher: Farmers' Bulletin 1,160, United States Department of Agriculture, Washington. *The Production and Utilisation of Corn Oil in the United States*. By A. F. Sievers. Bulletin No. 904, Washington. *Growing Corn in the South-Eastern States*. By C. H. Kyle: Farmers' Bulletin 1,149, Washington. *International Review of the Science and Practice of Agriculture*. Monthly Bulletin of Agricultural Intelligence and Plant Diseases, International Institute of Agriculture: Rome Printing Office of the Institute. *The Vegetable Garden*. By MM. Vilmorin-Andrieux. Third (enlarged) edition. John Murray, 50a, Abemarle Street, W.1. Price 25s. net.

NOTICES OF BOOKS.

London Trees.

This book* by Mr. Angus D. Webster, late Superintendent of Regent's Park, London, is descriptive of the trees that give the best results under the atmospheric conditions which prevail in the metropolis. The author has found some difficulty in deciding which districts should be included and which left out, but generally the trees mentioned are to be found within a radius of eight miles of Charing Cross. Even then the atmospheric conditions of various points within that radius are so widely different that it is not safe to believe that all the trees mentioned may be planted indiscriminately. The author has borne this in mind, and has mentioned specifically the few trees that exist in especially unkind areas, such as that surrounding the Royal Mint, where the fumes given off from the refineries are peculiarly deadly to vegetation.

The London Plane is, of course, conspicuous, but Mr. Webster does well to direct attention to the fact that there are other trees that thrive quite as well in London, therefore there is no reason why the Plane should be planted with such wearying frequency. *Ailanthus glandulosa* and *Catalpa bignonioides* are two trees specially referred to as being thoroughly well adapted for indifferent atmospheric conditions, whilst the author is also favourably disposed towards the various species of *Pyrus*. Respecting the White Beam section of *Pyrus* it has been found that the various species withstand the atmospheric conditions of Glasgow almost better than any other tree except perhaps the Ash. The Horse Chestnut is not a good tree for very smoky districts, and is decidedly inferior to the Red-flowered *Aesculus carnea* for such places.

Mr. Webster does quite right in decrying the lack of thought and knowledge so often displayed in the selection and planting of street trees. Not only is the choice of species often unwise but they are planted too close together and in streets that are already too narrow for the traffic, hence the necessity for hard lopping immediately the trees make a presentable appearance.

Mention is made on several occasions of fine old specimens of the Mulberry in various parts of London, and to these may be added one growing in a small garden attached to the headquarters of the Honourable Company of Girdlers, within a stone's throw of the Bank, and another in the garden of Argyll House, in King's Road, Chelsea. To anyone wishing to know what trees may be expected to thrive in various parts of London, this book can be recommended, whilst it will also be found of considerable value to those who are interested in fine specimens of uncommon trees. To the author's number of specimen trees of *Paulownia imperialis* may be added another growing in a small garden opening off Goldhawk Road, Shepherd's Bush. This is a very fine specimen, approximately 40 feet high, with a well grown trunk. A curious mistake occurs on page 31, the Paper Birch, being given the scientific name of *Broussonetia papyrifera*, which is correctly the botanical name for the Paper Mulberry. In the event of another edition appearing that should be set right.

A Rare Work on Alpines.

This small volume† is probably the first book devoted to Alpine plants published in this country, and the author informs us he is unaware of any other. There is no copy in the Lindley Library, and I am indebted to Sir Isaac Bayley Balfour for the perusal of the copy before me.

The book is not mentioned by Mr. E. A. Bowles in the R.H.S. report of his lecture on "Rock-Garden Literature," nor is it recorded by Mr. Harman Payne in his *Florists' Bibliography*. By both writers the earliest English book on rock plants is given as Wooster's *Alpine Plants*, which was not published till 30 years later.

* *London Trees*, by A. D. Webster, pp. 1-218, with 32 full page plates: London, the Swarthmore Press, Ltd., price 15s. net.

† *Practical Hints on the Culture and General Management of Alpine or Rock Plants*. By James Lothian, Gardener to W. A. Campbell, Esq., of Ormsary, 1845. Published by W. H. Livers, Edinburgh.

In the language of the bookseller, the volume is 12mo, and consists of but 84 pages. In addition there are four coloured plates of plants, two plates of rockwork and a vignette title page. Included in the 84 pages there is a dedication page to Mrs. Campbell, of Ormsary, Argyllshire, the author's esteemed employer; a lengthy preface, an introduction running to six pages, and an appendix of 17 pages devoted to a catalogue of plants suitable for rockwork.

The body of the book is divided into three parts, and these again are divided into chapters, dealing with situation, construction, arrangement, etc. Dealing with construction, the author was untroubled about the relative merits of the stone to be used. Being situated on the sea coast, he went to the beach and found all he required, selecting those "worn into different shapes by the waves, and some containing cavities," and he adds that specimens of rare minerals should also find a place on the rockery.

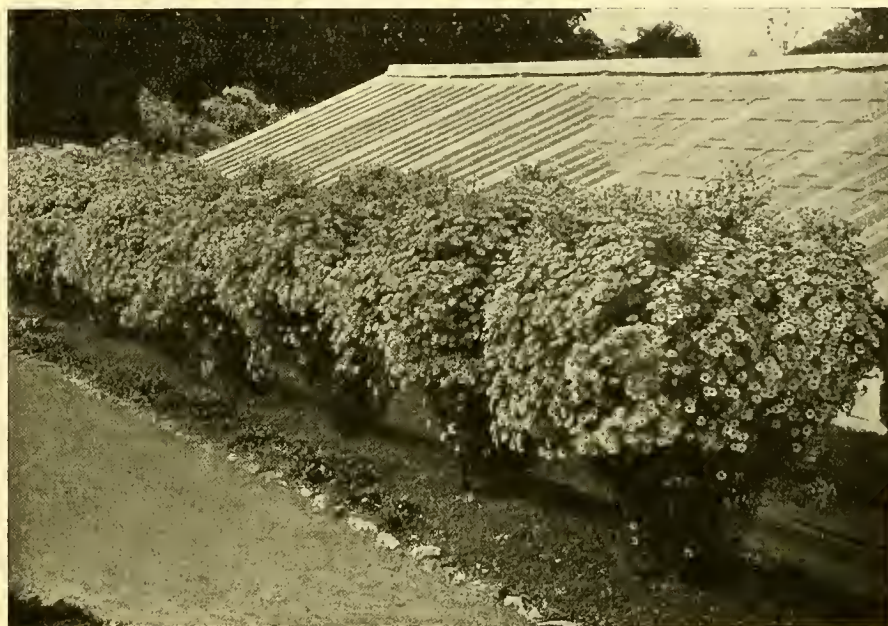


FIG. 132.—ASTER MONS AT ALDENHAM GARDENS.

A pond is recommended as part of every rockery, and the chapter on pond-making contains sound advice.

Part 2 deals with the plants, and one learns that pot culture was, as now, much practised, and elaborate directions are given as to how to build a pit or frame for the protection of the plants. In this chapter we read that the high duty on glass was a serious matter for garden owners.

Part 3 deals with the spring, summer and autumn treatment of Alpine plants, and it is evident that the damp Argyllshire climate gave much anxiety to the author.

One turns to the list of plants recommended with great interest, and quite an extensive catalogue is presented, including many native genera and species. Six species of *Androsace* are given, twenty-one *Campanulas*, nineteen *Primulas*, all European, and thirty *Saxifragas*. Numbers of the plants mentioned are not now in cultivation, including the beautiful *Dracopis grandiflorum* and the desirable *Triptilion spinosa*, the re-introduction of which should not be difficult.

It is interesting to note that *Trifolium uniflorum* is included, this little plant having recently received the R.H.S. Award of Merit.

The plants depicted in the coloured plates include *Soldanella Clusii*, *Gentiana nivalis*, *Dryas octopetala*, *Azalea procumbens*, *Andromeda tetragona*, and the still rare *Andromeda hypnoides*. *T. Hay*, Regent's Park.

HARDY FLOWER BORDER.

MICHAELMAS DAISY "MONS."

THE improvement of the Michaelmas Daisy during the past ten or fifteen years has been most marked, and we have at our disposal a wealth of beautiful varieties. The trial of these flowers at Wisley this year was a revelation to many, and the method of growing the plants in rows, with each plant a well-developed specimen, amply demonstrated the advantages of allowing ample space to these useful autumn flowers.

In the autumn of 1916, I exhibited at the Royal Horticultural Society's meeting on October 10th, a large number of new seedling perennial Asters. One of them, King of the Belgians, gained an Award of Merit on that occasion, and since then the following members of the group have gained similar awards during subsequent years for their different exhibitors:—Brightest and Best, Antwerp, Mons, and Robinson, V.C.

Another of the same batch, which apparently

escaped the critical eyes of the R.H.S. Floral Committee until it appeared in the Wisley Trials this year, was *Aster Bruges*, and that also, during the aforesaid trials, has also gained the Award of Merit.

From the date of its introduction in 1907, I have never had the slightest doubt as to the great merit of the variety Mons, and at the R.H.S. trials it repeated its success. I always considered it as one of the most distinct Asters I had raised up to then. The illustration (Fig. 132) shows a row of 10 plants set at intervals of about 4 feet, and the plants when in full flower were objects of remarkable beauty. The plants only reach a height of about 3 ft. 6 in. to 4 ft., and always form sharply, rounded bushes, as shown in the picture. The flowers are deep pink, and as they have the habit of all practically opening at the same time, the plants look like pink globes and the whole row, viewed from a distance, conveys the impression of a long line of deep pink velvet. It has been one of the most attractive varieties in our collection, which numbers over 150 varieties.

The variety Mons has a fine, healthy constitution, and the additional advantage of being fairly early flowering, whereby one gets the benefit of its full floral beauty before there is much risk of damage by severe early frost; it has, also, a long period of flower. Being a sturdy grower, it is essential that the growths in their younger stage should be thinned to not more than five of the best. The plants in the illustration comprised, in the majority of cases, only three shoots. *B. Beckett, F.M.H.*

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEOS, Gardener to the Dowager Lady NENBERGHOLME, Warter Priory, Yorkshire.

Shrubby Spiraeas.—Included amongst the best flowering shrubs for grouping boldly are many species and varieties of Spiraea. In the shrubby border, by woodland walks, or at the waterside, they should be grouped in quantity to obtain the best effect. Single specimens of *S. cantoniensis*, a sub-evergreen species of somewhat weeping habit, and *S. Lindleyana*, with Fern-like foliage, are pleasing when well grown; the latter is also decidedly useful for massing at the waterside. *S. ariaefolia* is a well-known shrub, flowering late in summer; it thrives equally well in sun or partial shade, and is in no wise particular as to soil. Amongst species and varieties used extensively in gardens are *S. Thunbergii*, 2 feet, white; and *S. Anthony Waterer*, 2 feet, carmine red. Attention may also be called to dwarf, trailing, and prostrate species, such as *S. decumbens* and *S. mollifolia*, which may be employed in the rock garden with good effect.

Planting the Crab.—A large plantation of *Pyrus* in flower, on a grassy site, is charming and worthy of repetition, and the planting of bulbous plants around and between the trees adds greatly to the scene. In a spot of somewhat formal outline, the presence of broad, straight grass walks radiating from the centre are pleasing, and the sides of these may be planted with standard and half-standard Crabs to form avenues. Moreover, quite narrow borders may run close to, and in line with, the walks, and these may be specially prepared for Tulips in spring and Marigolds in summer and autumn. Apart from the outskirts and avenues, formal planting should be abandoned, and irregular and well-distanced groups of standard and pyramid Crabs in selected varieties arranged. Single, dwarf specimens, which may be kept low by judicious pruning, assist in securing pretty views and promote harmony. The genus *Pyrus* grows freely in any good soil, and the members are adaptable to various positions in the flower garden. *P. floribunda* and its varieties are very effective in any style, whilst a cloud of pink results in the grouping of *P. spectabilis* in pyramid form. *P. Schiedekeri* is prone to canker, but, nevertheless, is worth planting for its delightful rose-pink flowers. The brilliant leafage in autumn of *P. melanocarpa* sufficiently commends this bushy plant, and the Siberian Crab (*P. prunifolia*) should be included for its yellowish-red fruits. The Dartmouth and John Downie Crabs are pleasing, both in flower and fruit, and the latter makes excellent preserve.

Briars.—If it is desired to raise seedling Briars for the purpose of budding, the hips of the Dog Rose may yet be gathered and buried in sand in the open. Three months hence the fleshy part of the fruits will have decayed. Collect strong plants of the Dog Rose from the hedgerow in readiness for budding next season.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nod, Codicote, Welwyn, Hertfordshire.

Raspberries.—The plot set apart for these fruits, and prepared as previously advised should be planted forthwith. The distance to plant depends entirely upon the manner of cultivation. If planted in clumps, they should be 4 feet apart in rows placed 5 feet asunder, but the most general method is to plant in a continuous row and train the canes to wires. Where this system is adopted, strong poles should be fixed at either end of the row, and, if necessary, a few intermediate stakes driven in to support the wire. The canes should be

planted 2 to 3 feet apart in the rows, but much depends on the strength of the variety. Strong-growing sorts, such as Lloyd George, should be planted 3 feet apart in the rows. When planting is finished, apply a thick mulch of well-decomposed manure or leaf-mould.

Vines on Walls.—The pruning of hardy vines should be done forthwith. It is far better to prune as soon as the vines are practically dormant than to defer the work until the sap commences to rise in the spring, as they are then more likely to bleed. The spur system of pruning is best, as the buds break more regularly and are more likely to produce fruitful growths than under any other system. Some growers remove the bud nearest to the old wood and allow the next one to form the fruiting growth, but this practice tends to produce ungainly spurs. The usual method is to shorten the lateral growth to two or three eyes, and when these break into growth the following spring, retain the best and most suitably placed shoot for fruiting, removing all others. This practice may be followed for several years, until the spurs become too long, when young growths arising from the base of the vine may be trained in to replace the older rods. If the vines are infested with insects they should be cleansed. The borders may receive a dressing of bone meal, and if the vines are not in a healthy condition, some of the top soil should be removed and a richer compost substituted to encourage better root action. Afterwards top dress the roots with well decayed manure.

FRUITS UNDER GLASS.

By F. JENNAN, Gardener to Viscount, SPENDER CLAY, M.P., Ford Manor, Linsfield, Surrey.

Early Peaches.—In a recent calendar, I urged the importance of pruning, cleansing and training early Peach trees in readiness for forcing. If ripe Peaches are required from trained trees in May, the houses should now be closed for forcing, as it is much better to start forcing early at a low temperature, with plenty of air, than to force hard against time, as this would spoil the flavour of the fruits. Examine the inside borders carefully down to the drainage to ascertain if the soil is in a good condition; if the compost is dry, it should be well watered with tepid water. Where space exists for placing fermenting material, it will be found a great help to the buds, as they develop much better under the influence of a steady supply of moist, warm vapour, than they do under periodical syringings with tepid water, which soon gets cold at this season of the year. Therefore, where Oak leaves are plentiful, these should be mixed with a little well prepared stable manure, and a layer a foot or two in thickness placed in the house. Whilst aiding the hot water pipes in supplying warmth and softening their drying influence, the fermenting material will give just that gentle stimulus to the roots that will help them to develop steadily. For some time after the house is closed it will not be necessary to use fire-heat, especially if the fermenting material is turned over frequently, and renovated with fresh material, as becomes necessary. However, as it is important to admit air before the buds break, it is better to use the hot-water pipes in cold, damp weather, than keep the house closed and full of cold vapour. The buds on trees that are started with a free circulation of fresh air break stronger, and the flowers set more freely than when they do not receive this attention. On fine, bright days, more air may be admitted; at other times opening the top ventilators only may suffice, and, when the buds become prominent, the use of gentle fire-heat will permit of the admission of more air, when gentle syringing may be done once or twice in the course of the sunniest part of the day. A temperature of 40° to 45° is sufficient at the commencement, then, as the buds swell, 45° may be taken as the minimum, 55° the maximum, rising to 60° with sunheat, in the middle of the day.

PLANTS UNDER GLASS.

By JOHN COUPE, Foreman, Royal Botanic Gardens Kew.

Lily of the Valley.—Where constant supplies of Lily of the Valley are required, ordinary crowns or the so-called Berlin crowns, should now be used for forcing. They may be placed in pots or packed in boxes from which they may be taken to make up pots or ornamental bowls; as they form no fresh roots during the forcing period they may be moved in this way without harm. The soil or fibre in which they are placed should never be dry. Lily of the Valley may be forced in a high temperature that would prove fatal to most plants. They develop rapidly plunged in a bed with a bottom-heat of 80° to 90°. The pots or boxes should be covered with clean Moss, as this material conserves the moisture. If placed in close cases it is wise to ventilate them a little, especially during the night.

Violets.—Plants in frames should have all decayed leaves picked off. Watering should be done during bright mornings. Admit air freely, according to the weather conditions, and cover the frames with mats or other protective material during the night. Violets in pots are useful for greenhouse or indoor decoration, and are best grown in a cool house. As they are subject to attacks of red spider, a dry atmosphere must be guarded against, and strict attention given to watering. Plants in pots should be assisted by frequent applications of a concentrated fertiliser. Suppress all runners that develop on plants grown in pots and frames.

Luculia gratissima.—This beautiful winter-flowering greenhouse shrub has been in flower for some weeks. It always attracts attention with its large trusses of rosy pink flowers, which have the added charm of being deliciously fragrant. It is a plant that is not generally happy under pot cultivation, and is seen to best advantage when planted out in a light position in a conservatory or greenhouse, where it may be grown as a free-growing bush, or it may be trained on a back wall of the house. After flowering, and early in the New Year, it should be pruned hard; during this period, and until growth commences again, the roots should be kept somewhat dry. This plant has always been regarded as extremely difficult to propagate, and it is a fact that it has frequently baffled many skilled propagators. This has probably resulted from taking cuttings from plants growing in a cool house and attempting to root them in a high temperature. It may be successfully propagated by means of cuttings, if stock plants can be kept in pots, and introduced into a higher temperature, where they soon make fresh growths which should root readily; short, twiggy shoots root better than strong, gross ones. Cuttings taken from plants growing in a cool house should be placed in a case in a cool house, with very slight bottom heat, until the cuttings callus; then, if placed in a higher temperature, they will root readily. They should never be allowed to flag; if this happens, it is hopeless to expect them to root; so important is this fact that it makes all the difference if the leaves are supported in an upright position. The plant is easily raised from seeds, but plants from seeds vary considerably in the quality of their flowers.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Asparagus.—To maintain a constant supply of this vegetable throughout the winter, fresh batches of roots should be introduced into heat at intervals of about four weeks. A brick-pit containing a mild hot-bed made of leaves firmly trodden together is suitable for the forcing of Asparagus. Place a shallow layer of fine soil on the surface of the beds, stand the roots on this, after which add sufficient soil to bury them to a depth of three inches. Give sufficient water to thoroughly moisten the soil, but avoid saturating the hot-bed. In the spring, new Asparagus beds should be planted to make good the deficiencies caused by forcing. At the first

favourable opportunity trench the site of these new beds, adding any material that will tend to make the soil light and open, and raise the beds above the surrounding level. Each bed containing three rows of plants should be five feet wide; a space of two feet should be allowed between the beds.

Spring Cabbage.—Where these greens were planted in shallow drills, the replacement of the soil will afford the necessary protection from frost. If, however, they were planted on the flat, a moderate amount of soil should be drawn up to the plants, as this will assist them to withstand severe weather.

Turnips.—The mild autumn has been favourable to the unrestricted growth of Turnips, and all fully-matured roots should be lifted and stored as previously advised. Late-sown beds of Turnips in a backward condition should have the soil drawn over the roots as a protection from frost. Swedes also should be lifted and stored.

French Beans.—French Beans sown in pots at the end of October require top-dressing with a mixture of leaf-mould and loam in equal proportions. Press the soil firmly down on the roots. Plants in bearing should be given liquid manure on frequent occasions. Make successional sowings according to requirements. On bright days syringe the plants during the morning and afternoon, and maintain a moist atmosphere about them to prevent attacks of red spider. Grow the plants in a light position in a house having a night temperature of 60°.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.
Castleford, Chepstow.

Cirrhopetalum robustum.—This strong-growing Orchid should be rested when the pseudo-bulbs are fully developed. The plant requires warm house treatment when in active growth, but while at rest a temperature a few degrees lower will be beneficial, provided the roots are kept on the dry side. If the plant is healthy the roots will require water at rare intervals only, but enough moisture should be given to keep the pseudo-bulbs in a plump and rigid condition.

Brassia.—This genus contains a number of interesting species including *B. Lawrenceana*, *B. brachiata*, *P. caudata*, and *B. verrucosa*. All may be grown in the Cattleya or intermediate house. Repotting should be done when new growth begins, and the usual compost may be used with the addition of a few broken Oak or Beech leaves. Brassias enjoy a certain amount of shade, therefore it is advisable to protect them from strong sunlight. Plenty of water is needed throughout the growing period, and when at rest the soil should be kept just moist.

Masdevallia towarensis.—The flower buds of this chaste *Masdevallia* are developing, and if not already there the plant should be removed to the intermediate house or in a house having a temperature of about 60°. Afford the roots water liberally while the plants are in bloom, and when the flowers are over the plants may be returned to the cool division. If the house is fumigated remove these special plants to another structure until the fumes have escaped, or the colour of the flowers will be spoiled. Where the plants are in a healthy condition the scapes should be left, and next season they will produce three or four blooms. Any stems that are flowering for the second time should be removed.

Cattleya labiata.—When this useful and popular *Cattleya* passes out of flower, topdressing or repotting may be done. Where the roots are far advanced, this work needs to be done with extra care, to prevent injuring them. Very little water will be needed, but enough should be given to maintain the pseudo-bulbs in a plump condition, and to encourage root action. *Cattleya labiata* and some of its hybrids produce thick, fleshy sheaths in conjunction with the flower spikes, therefore, when the latter are removed, a watch must be kept for the accumulation of damp at the base of the leaf. If this trouble is detected, a little powdered charcoal should be sprinkled on the affected parts, first removing any diseased portion of the sheath.

NATURALISING PRIMULAS IN WOODLANDS.

The term "naturalising plants" may be defined in two ways, either as the introduction in quantity of plants which grow in similar positions in nature, or the introduction of garden forms—sometimes of exotic origin—and establishing them where they will continue flowering and seeding without further attention. It is with the second system that I propose to deal, illustrating my remarks by the wild garden at Wisley, a spring scene in which is illustrated in Fig. 133.

Success in this form of gardening depends upon two things—choosing the right varieties and putting them in suitable positions. Both of these connote considerable knowledge and experience and a few notes from a place where results have amply justified practice may not be inappropriate.

The woodland at Wisley is in a somewhat moist situation and the trees consist of Oak and Birch which, while providing the requisite shade, do

does not seed so freely as the others. Planted in June, it withstands the winter well and flowers the following year.

The Primula season may be lengthened by introducing Primroses, which are the earliest of all to flower, and the attraction of the wild garden may be varied by the employment of other plants suited to similar conditions. Among these are *Anemones*, which are quite at home in such an association; *Campanula lactiflora*, which flourishes in grass beneath the partial shade of trees, and *Gentiana asclepiadea*, which grows very freely at Wisley beside ditches, paths and in shady positions among grass. American Lilies, such as *L. pardalinum* var. *superbum* also make a fine display in summer.

A word may be added with regard to the effects which can be obtained. The sight of hundreds of flower heads of various hues, glowing amid the delicate green of the foliage associated with the subdued light of woodland, is a sight to be remembered—and reproduced—for this form of gardening is quite distinct, and from its very nature possesses a charm entirely its own.

A. E. Sims, Green Side, Ripley, Surrey.



FIG. 133.—PRIMULA JAPONICA IN THE WOODS AT WISLEY.

not exclude too much light. At intervals are planted clumps of Bamboos, which not only provide additional shelter, but also form a pleasing setting for the flowers.

With regard to the soil for Primulas, they will grow in any kind of loam, but they will not succeed in pure peat. If, however, a layer of loam is mixed with the surface of the latter, satisfactory results will be obtained.

When making new plantations it is advisable to use young plants in preference to sowing broadcast. Once established they will seed themselves and seedlings spring up in numbers.

The selection of varieties requires a knowledge of the season and colour of the plants and their suitability for naturalising. The Primulas here given have proved their worth in the situation mentioned. The first of the true Primulas to flower is *P. japonica*, the colours of which range from deep magenta to white. Following them we have members of the *Candelabra* group—*P. Bulleyana*, *P. Beesiana* and *P. pulverulenta*. After these come the new strain of *Candelabra* hybrids, which include all the colours of the Giant Azaleas and flower in July, thus greatly prolonging the season. Three promise especially well for naturalising, namely *P. heliodora*, a rich golden yellow species which attains a height of 4 ft.; *P. anisodora*, the darkest maroon; and *P. glycosma*, which has the colour of the old *P. Poissonii* and is the latest of all to flower. *P. Littoriana* flowers well but

THE BULB GARDEN.

TWO NOVEMBER CROCUSES.

WITH the exception of *C. Scharojani*, which, when it flowers at all, comes into bloom in August, *C. vitellinus* is the earliest of the yellow-flowered species that I have grown. Some years ago I received a bulb or two of this species from the neighbourhood of Jerusalem and I have now a little colony which has provided a welcome patch of deep golden yellow among the whites and purples of the other autumnal species. The flowers are small, but the colour is a deep red-gold and the outer segments are slightly feathered with brown purple. As the slender leaves are at least as tall as the flowers the latter have not that naked appearance which somewhat tends to detract from the beauty of such species as *C. medius* and *C. speciosus*.

Crocus hyemalis came to me with *C. vitellinus*, and the conspicuous dark purple or black anthers identify it at once as the variety *Foxii*. The leaves come up with the flowers and the corns multiply slowly and not at such a rapid pace as those of *vitellinus*. The open flower is pure white with a golden centre against which the dark anthers stand out conspicuously. The outer surface of the outer segments is delicately veined and mottled with blue-purple, and the flowers have the further merit of being strongly honey-scented. W. R. Dykes.

EDITORIAL NOTICE.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

POLLINATION OF FRUIT TREES.

EVEN where a high standard of cultivation is maintained, it is by no means uncommon to find healthy fruit trees which freely produce normal flowers and yet fail to bear satisfactory crops in favourable seasons. In such cases as these, where the trees are established, many of the possible causes to which collectively or individually the failure might be attributed, are eliminated. In fact, only those connected with the pollination and fertilisation of the flowers remain as a conceivable or probable cause. Experiments which have been carried out, first by Mr. Waite in America, and subsequently by Mr. Chittenden at Wisley, Mr. Hooper at Wye, and by various workers at the John Innes Horticultural Institution, have shown that varieties of fruit trees can conveniently and for the purpose of this article be placed in one or the other of the three following groups:—(1) Those which are completely self-sterile, and which fail to set a single fruit with their own pollen. (2) Those which, though not completely self-sterile, are incapable of producing a satisfactory crop with their own pollen. (3) Those which are completely self-fertile, and which develop full crops when self-pollinated. In group (2) a considerable variation occurs in the degree of self-fertility met with, but from a horticultural point of view they all may be included in one group.

It is essential to remember that the whole of the existing trees of one variety are parts of but one individual, forming, as the Americans say, one "clone," and that if the variety is self-sterile the pollen from any one tree is quite ineffective on itself, and on any other in the clone. Further complications may have hereafter to be considered.

Broadly speaking, the experimental data show that our varieties of Plums consist of two larger classes, self-steriles and self-fertile, and that comparatively few occur in group (2).

All the sweet Cherries, the Bigarreans and the Guignes that have been tested are completely self-sterile. A comparatively few varieties of the sour Cherries have been dealt with, but representatives of these occur in each group. Of the varieties of Apples tested, groups (1) and (2) collectively contain the greater number.

With the above facts in mind it is readily seen that should a large area of a variety in group 1 or 2 occur alone, pollen must be conveyed by some agency from another variety to obtain satisfactory crops. The same applies to individual trees in small gardens.

In private gardens, where wall and other trained trees usually producing the choicest fruits include many self-sterile varieties, hand pollination should be considered. This by no means would necessarily involve a lengthy undertaking, or a vast amount of work. During the present season a case was brought to the writer's notice where hand pollination was accompanied with remarkable success. Several established wall-trained trees had always failed to produce fruit, although they had flowered freely in past years. The Plum, Coe's Golden Drop, was cross-pollinated with Comte D'Althaus's Gage, and various other varieties with pollen from other distinct varieties; all the trees set and carried heavy crops. These results conclu-

sively point to the practice of hand pollination being of the greatest value. This especially applies to trees in suburban areas, where the scarcity of flower-visiting insects in the early months of the year is very noticeable, and in fact, to obtain good crops in such areas, hand pollination may be regarded as a first essential.

Another example showing the value of providing self-sterile varieties with the pollen of another variety has come under my notice. In this case flowering branches of a distinct variety were placed in bottles of water between the branches of some self-sterile Plums which were growing in isolated positions. The bees were observed to pass from the flowers on the cut branches to those on the growing tree, thereby effecting cross-pollination. The result was the trees carried good crops, whilst in previous years they had failed to fruit. When the expense and the labour involved in the pruning, spraying and other cultural operations, are



FIG. 134.—APPLE COX'S ORANGE PIPPIN.

Left portion of tree, 300 flowers × Sturmer Pippin, 29 fruits set; right portion of tree, 682 flowers self-pollinated, only 1 fruit set.

considered, the time that it would take to carry out the additional work would be comparatively short.

The question of cross-incompatibility need not be dealt with in detail here. In the course of our work no clear case has occurred in Apples. A detailed report of the work up to the year 1918, by Miss I. Sutton, has been published in the *Journal of Genetics*, Vol. vii., No. 4, also in the *Journal of Pomology*, Vol. i., No. 1.

In this report some of the records are liable to favour the view that certain varieties may be better pollenisers for some varieties than others. Repetition of several of the outstanding cases and further work, are, as a whole, against such a view. For example, in our early work, Cox's Orange Pippin, when crossed with Sturmer Pippin, set very few fruits. Fig. 134, which illustrates a repetition of the cross, the same individual trees being used, shows the heavy crop obtained. Other outstanding cases have been repeated with similar results.

In Plums four cases of cross-incompatibility have occurred. The varieties, Coe's Golden Drop, Coe's Violet, Crimson Drop and Jefferson are inter-sterile in all combinations. Coe's Violet and Crimson Drop are known to have originated as bud sports from Coe's Golden Drop, and are merely representations of a fruit colour variation. I have observed many hundreds of flowers of Jefferson, and in no case have more than two developed from one bud. In the Coe group threes and fours occur typically, also there are other distinctive differences.

The work of Gardner in America, (*Bull 116 Oregon Agric. Coll.*), and also our own, indicates that in Cherries cross-incompatibility may be more frequently met with, but until the work has been carried further, no general statement can be made. Reference, however, to the publications mentioned, and to the other papers referred to therein, would with many varieties serve as a guide. Space prevents the full significance of the work being discussed here, but for the pollination of self-sterile and partly self-fertile varieties of fruit trees, pollenisers must be planted for the production of satisfactory crops. Omitting the exceptions mentioned above, probably any variety, at least of Plums or Apples, will serve for this purpose, provided that it produces pollen freely and flowers at the same time. Our work, although it has not been very extensive in this direction up to the present, indicates that Damsons and other varieties of *Prunus insititia* may be efficient pollenisers for our Plums. Preliminary trials with pollen of *Prunus spinosa* have completely failed, and trials with the pollen of varieties of the Cherry Plum, *Prunus cerasifera*, have resulted in comparatively few fruits setting; further, they generally flower much earlier than varieties of *Prunus domestica*.

Care should be taken when removing trees from existing plantations; in particular a single variety should not be left, unless it is self-fertile. To plant a large block of one variety, unless it is known to be completely self-fertile. To plant a large block of one economically unsound.

The wind is frequently assumed to be an agency by which the pollination of fruit is effected, but the observations and experiments of many investigators, point conclusively to the majority of our fruits being largely, if not wholly, dependent on insects for the production of satisfactory crops. That certain varieties of Apples produce seedless fruits without fertilisation is well known. Seedless Gooseberries also occasionally occur. Such berries are, however, lighter in weight than normal fruits, and seedless Apples are frequently small and of irregular shape.

Wild bees and other flower-visiting insects are valuable pollination agents, but the importance of the hive bee should not be overlooked. The presence of hives of bees in fruit plantations may make all the difference between a light and a full crop.

The length of time that the stigma of the flowers of various fruits remain receptive naturally varies with external conditions, but once pollen comes in contact with the receptive surface of the stigma it is fairly secure. The liberal application of water in various ways shortly after pollination has been found to have but little if any deleterious effect. M. B. Crane, *The John Innes Horticultural Institution*.

TREES AND SHRUBS.

AREUTUS MENZIESII.

When sailing into Victoria, British Columbia, what strikes the tree lover most is the beautiful cinnamon-tinted bark of *Arbutus Menziesii*—the *Modrona*—which stands out so conspicuously against the dark-folaged Pines and Firs with which the rocky mainland and islands are thickly covered. It is a tall, handsome tree, sometimes of giant proportions, one that I measured at the Gorge, a little way out of Victoria, being 20 feet 2 inches in stem girth at a yard up, with a branch spread that covered a space of 75 feet in diameter. Such trees are uncommon, though I was told that the largest number of the biggest trees on the island was to be seen at the Quarantine Station. In an adjoining wood, composed principally of *Abies grandis*, I met with many specimens of this *Arbutus*, especially in the more open parts of the forest, and by the banks of streams, while seedling plants of the most robust growth were plentifully distributed all over the woodland and seemed well able to hold their own with the Firs and hardwoods. Where uncrowded it forms a much handsomer, round-headed tree than when of plantation growth.

This *Arbutus* is one of the most distinct and beautiful of evergreen trees, far ahead of our native Strawberry Tree in that respect, with big, smooth, Laurel-like leaves, thick and leathery and of a metallic green shade. The panicles of deliciously scented white flowers and superabundance of the daintiest orange-red berries render full-grown specimens as conspicuous as they are beautiful and uncommon. The fruit is only about half the size of that of our native British species, but produced in far greater abundance. I counted as many as twenty-six bunches, each 7 inches long by 4 inches wide, and containing over one hundred and twenty berries, on a single branch of a tree. The wood is valued for making choice furniture and fancy boxes, being of a pleasing reddish-brown colour, clean-grained, hard and taking a high polish. An avenue of this *Arbutus* has been planted on Vancouver Island a short distance from Victoria, and should, in a few years (for the tree grows rapidly) present an unique and distinctly ornamental appearance. It is hardy in England, and fairly healthy specimens may be seen in and around London.

QUERCUS GARRYANA

(THE GARRY OAK).

Known also as the Vancouver Island Oak and the White Oak, this interesting tree, which bears a superficial resemblance to our native species, may, however, readily be distinguished by the light grey, corky bark, and tufted, deep green leaves which have the appearance of being varnished on the upper surface. When staying in Victoria I had good opportunities of examining the tree in its native wilds where, on the uplands, it covers large areas of rocky ground with, in many places, only a few inches of soil on top. It is the most tortuous growing Oak that I have seen, the branches of many trees assuming the most weird and contorted appearances, just what in England would be valuable for boat knees and crooks. Though common to all, the dwarfed trees on the most exposed and poor lands are worst affected in that way, where many assume a semi-procumbent and fantastic mode of growth that is uncommon to any other species of my acquaintance. So pronounced is this peculiarity of growth that an illustrated paper on the subject is being prepared by Mr. Pemberton, of Victoria.

In the lower-lying and more fertile lands the tree attains fair dimensions, and some exceptionally large specimens that I measured were 13 feet in girth of stem at a yard from ground level, but these, I was informed by the Government botanist, are about the largest on the Island.

The leaves of the Garry Oak, which are irregularly five or six-lobed and crowded near the branch tips, giving the tree a tufted appearance, average 4 inches in length by

about the same in width, and have stout footstalks varying from $\frac{3}{4}$ inch to 1 inch in length. They are of a dull green, conspicuously varnished above, much paler beneath, and with very prominent midribs. The buds, which are large for an Oak, are from $\frac{1}{4}$ to $\frac{3}{8}$ inch long, sharply pointed and thickly coated with rusty brown hairs, as are also the younger shoots. The Acorns are sessile, or nearly so, obovoid in shape, 1 inch long by about half that in diameter, with a lepressed cup that is hairy inside and thickly covered with scales.

Though of little value from a purely commercial point of view, the timber of mature trees is hard, weighty, tough, fine-grained, and of a rich yellowish-brown colour, and has been successfully utilised in the making of furniture and construction of "shacks" and fencing on

EUCALYPTUS GUNNII.

A CONTRIBUTOR to the *Gardeners' Chronicle*, dated October 3rd, invites notes relating to the hardiness or otherwise of *Eucalyptus Gunnii*, and I send the following observation in the hope that it may interest him. There are two or three fine trees near Cirencester, growing in the grounds attached to the Royal Agricultural College; from what information I can gather, they were planted some sixteen or seventeen years ago, and are now about 30 feet or 35 feet in height, and well furnished specimens. The trees are somewhat sheltered from the north and west, but are quite unprotected from cold easterly winds, and they do not appear to have suffered any injury during the



FIG. 135.—CHRYSANTHEMUM NORMAN CHITIENDEN. FLOWER WHITE, TINGED GREEN, F.C.C., NATIONAL CHRYSANTHEMUM SOCIETY AND AWARD OF MERIT ROYAL HORTICULTURAL SOCIETY, NOVEMBER 1920. EXHIBITED BY MR. E. LUXFORD.

the Island. This is the only Oak native to the Pacific Coast in Canada, and I was sorry to see that a tree with such a restricted geographical range is being gradually ousted by the Douglas Fir and other ubiquitous species, and in the confines of the forest many of the Oaks have been killed outright by the encroachments of this Coniferous tree.

Seedling Oaks of this species in some plenty I saw in many parts of the forest, particularly on the rocky, scanty-soiled uplands, for the tree bears Acorns freely which ripen the same year they are produced. The Garry Oak is rare in Britain, the best trees I have seen, and these are comparatively young, being in the extreme South of Ireland, but it does not appear to be suited for general cultivation and grows very slowly. A. D. Webster.

few severe winters experienced since they were planted. For about half their height, the trees are protected by undergrowth and by Conifers of sorts, but when one considers that here, on the bleak Cotswolds, we do not possess a climate eminently suitable to the growth and development of tender subjects, then the hardiness of this *Eucalyptus* is not open to any great doubt. I may state that the trees are growing in a dry position on rising ground.

E. Gunnii is a fine species and worthy of extended cultivation. We have experimented here with the well-known *E. globulus*, but with no measure of success, for the first severe frost, though not actually killing it, so disfigured it as to render it absolutely valueless. Ralph E. Arnold, Cirencester Park Gardens, Gloucestershire.

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYA J. F. BIRKBECK USK PRIORY VARIETY.

R. WINDSOR RICKARDS, Esq., Usk Priory, Monmouthshire, sends a superb four-flowered inflorescence of his very remarkable variety of this showy cross between C. Mendelii and L.-C. Henry Greenwood (L.-C. Schilleriana × C. Hardyana). The large and well-formed flowers have distinct resemblance to the best dark C. Mendelii, and the main distinguishing feature from others of the cross is that the broad white petals have each a blotch of violet colour at the tips, greatly adding to the novelty and beauty of the flower. The labellum has a white base and broad purplish-crimson front, the disc being sulphur-yellow, the fleshy column white.

NEW HYBRIDS.

FLOWERS of three new crosses are sent by Clive Cookson, Esq., Nether Warden, Hexham (gr. Mr. W. J. Stables). *Cypripedium Moonstone*, the largest and finest in form, raised between C. Mrs. F. Sander (Eye × *insigne* Sanderae) and C. Lord Ossulston (*Leeanum virginalis* × *Charlesworthii album*) has a pure white dorsal sepal, with yellowish base having emerald green lines, and massive petals and lip with yellow ground lightly tinged and veined with purplish brown.

Cypripedium Taurus raised from C. Hera Adrastus, the original Veitchian form (*Boxallii* × *Leeanum*) and C. *Leeanum* *Clinkaberryanum* still retains the Hera *Euryades* characters in an effective form. The broad, white, dorsal sepal is blotched with dark violet lines ascending from a small greenish yellow base, the petals and lip being yellow, faintly tinged with purple.

Cypripedium Circe, between C. *Zampa* (*hirsutissimum* × *Leeanum*) and C. Hera *Euryades* is in the same class as C. *Panther*, but

with smaller and more closely-distributed spotting, which extends to the lower half of the petals as well as the dorsal sepal.

CATTLEYA ANNETTE.

FLOWERS of this useful white-petalled *Cattleya* raised between C. *chocoensis* alba and C. *Warszewiczii* Fr. M. Beyrodt, are sent by Messrs. Stuart Low and Co., Jarvisbrook, Sussex. It differs from the other crosses of the labiata section in its broad white petals, which are inclined forward in the manner usual in C. *chocoensis*. It flowers, too, at a season when such blooms are very valuable. The labellum is clear violet-purple with rayed yellow lines extending to the disc, the undulated front lobe having a thin white margin. The cross was first flowered by Messrs. McBean last year. It was shown at Manchester on November 18 last as *Cattleya Marietta*.

LAELIO-CATTLEYA CADET.

This pretty hybrid, raised between *Cattleya labiata* and *Laelio-Cattleya Centaur* (C. Lord Rothschild × L.-C. *bletchleyensis*), is flowering in Mrs. Bischoffsheim's gardens. The Warren House, Stanmore (gr. Mr. Taylor). The sepals and petals are rosy mauve, and the showy labellum dark ruby-crimson, with gold lines from the base. It is a good, bright winter flower.

BRASSO-LAELIO-CATTLEYA SNOWDON.

MESSRS. SANDERS, St. Albans, send a flower of their new cross between *Brasso-Cattleya Digbyano-Mossiae*, var. *Queen Alexandra*, and *Laelio-Cattleya Isabel Sander* (C. *Mossiae* *Reineckiana* × L.-C. *Canhamiana*). *Cattleya Mossiae* enters three times into the composition of the novelty, and aids much in giving fine form and substance. The flower measures eight inches across, and is pure white with a very faint rose line on the front of the broad fringed lip, which has a saffron-yellow centre.

NEW HYBRIDS.

(Continued from November 6, p. 227.)

Name.	Parentage.	Exhibitor.
Brasso-Cattleya Dr. C. G. Macdonald	B.-C. Ilene × C. Peetersii	Flory & Black.
Brasso-Cattleya Hannibal	C. Fabia × B.-C. Digbyano-Warneri	Sir Geo. L. Holford.
Brasso-Laelio-Cattleya Eileen	B.-C. Monica × L.-C. St. Gothard	A. Hamner, Esq.
Brasso-Laelio-Cattleya Maculata	B.-L.-C. The Baroness × L.-C. Thynne	Baron Schröder.
Brasso-Laelio-Cattleya Snowdon	B.-C. Digbyano-Mossiae Queen Alexandra × L.-C. Isabel Sander	Sanders.
Brasso-Laelio-Cattleya Regalia	B.-C. Digbyano-Mendelii × L.-C. Dominiana	Stuart Low.
Cattleya Annette	<i>chocoensis</i> alba × Warszewiczii, Fr. M. Beyrodt	S. Gratrix, Esq.
Cattleya Amur	Drapsiana × Dowiana aurea	A. McBean.
Cattleya Aureata	Fabiata × Dowiana aurea	A. McBean.
Cattleya Esther	Barbara × Maggie Raphael	Sir H. S. Leon.
Cattleya Pictoree	Hardyana × Octave Douin	W. R. Fasey, Esq.
Cattleya Vestris	General Pau × Dupreana	Stuart Low.
Cypripedium Albert Fisher	Pyramus × Idina	Flory & Black.
Cypripedium Caryville	Mrs. Cary Batten × villosum aureum	S. Gratrix, Esq.
Cypripedium Christopher Columbus	Christopher × <i>Leeanum</i>	W. R. Fasey, Esq.
Cypripedium Circe	Zampa × Hera Euryades	Clive Cookson, Esq.
Cypripedium Elise II.	Lady Dillon × Hermes	A. Hamner, Esq.
Cypripedium Forest King	Desdemona × Beckmanni	H. T. Pitt, Esq.
Cypripedium Georgius Rex	Minos Youngii × Alcibiades	Armstrong & Brown.
Cypripedium Lord Wolmer var. Taurus	Hera Adrastus × <i>Leeanum</i>	Clive Cookson, Esq.
Cypripedium Moonstone	Mrs. F. Sander × Lord Ossulston	Clive Cookson, Esq.
Cypripedium Pontifex	Nubia × Lord Wolmer	Rev. J. Crombleholme.
Cypripedium Warrior	Alcibiades × Lord Wolmer var.	Sanders.
Cypripedium Solum var. Colin Barrow	Acteans Bianca × Sanaetacus	Sir H. S. Leon.
Cypripedium Swallow	Swallowtail × Satyr	Sir Geo. L. Holford.
Laelio-Cattleya Amber	C. Antiope × L.-C. Golden Oriole	Sir Geo. L. Holford.
Laelio-Cattleya Audrey	St. Gothard × Armstrongiae	Stuart Low.
Laelio-Cattleya Burbagei	C. Venus × L.-C. Illustris	A. Hamner, Esq.
Laelio-Cattleya Evelyn	C. Leda × L.-C. Dominiana	Stuart Low.
Laelio-Cattleya Goliath	C. Luddemanniana × L.-C. Colmaniana	Sanders.
Laelio-Cattleya Heckla	C. Fabia × L.-C. Luminosa	Sir Geo. L. Holford.
Laelio-Cattleya Hermes	L. Gwennie × L.-C. Elinor	Sir Geo. L. Holford.
Laelio-Cattleya Ilex	C. Fabiata × L.-C. St. Gothard	A. McBean.
Laelio-Cattleya Chloris	L. purpurata × L.-C. Gladiator	Sir Geo. L. Holford.
Laelio-Cattleya Cyrus	C. Maggie Raphael alba × L.-C. Cowanli	Armstrong & Brown.
Laelio-Cattleya Delight	Luminosa × Golden Oriole	Sir Geo. L. Holford.
Laelio-Cattleya Esther	L. Gwennie × L.-C. Cranstoniae	Sir Geo. L. Holford.
Laelio-Cattleya Fairy	Cranstoniae × Antiope	Sir Geo. L. Holford.
Laelio-Cattleya Hannibal	C. Dowiana aurea × L.-C. Olivia	Sir Geo. L. Holford.
Laelio-Cattleya Osprey	C. Dowiana aurea × L.-C. Aphrodite	Sir Geo. L. Holford.
Laelio-Cattleya Nairobi	Callistoglossa × Ily. Greenwood	Stuart Low.
Laelio-Cattleya Patricia	L.-C. Dr. R. Schiffman × C. labiata	Stuart Low.
Laelio-Cattleya Renown	Statteriana × St. Gothard	A. Hamner, Esq.
Laelio-Cattleya Senate	L.-C. Orion × C. labiata	Stuart Low.
Odontodia cardinalis	Oda Schröderiana × Odm. eximium	Charlesworth & Co.
Odontoglossum Redskin	Nathaniel × illustrissimum	W. R. Fasey, Esq.
Odontoglossum Red Admiral	eximium × Lambardeanum	W. R. Fasey, Esq.
Odontoglossum Sandow	eximium × Rosella	W. R. Fasey, Esq.
Sophro-Laelio-Cattleya Axholme	S.-L.-C. Helen × L.-C. Colmaniana	Sir J. Colman and A. Francois, Esq.
Sophro-Laelio-Cattleya Moonbeam	L.-C. Martineii × S.-L.-C. Marathon	S. Gratrix, Esq.
Sophro-Laelio-Cattleya Forma	L.-C. Haroldiana × S.-L.-C. Niobe	A. J. Hollington, Esq.

THE ALPINE GARDEN.

ANEMONE FULGENS.

DENIED specific rank by most botanists, *Anemone fulgens* is too well known by this name to be spoken of by gardeners under its scientifically correct one of *Anemone hortensis fulgens*. It is one of the most brilliant and beautiful of the many gems which spring yields to our admiring eyes, and few there are who can see it without expressing their warmest admiration.

It is not, however, too plentiful in gardens of the present day. Like *A. hortensis* itself, it comes from South Europe and is said to have been introduced about 1855, but its full value does not seem to have been fully brought before the notice of the public until an illustration appeared in *Revue Horticole*, 1877. Since that time it has been more coveted, and happy are they who can cultivate it with the success its loveliness deserves. The leaves are neat and possess much beauty while the broadly segmented flowers of a glowing scarlet borne on graceful stems amply justify the name of *fulgens*. The black centre seems to add to the intensity of the scarlet. There is, however, a shyness of blooming in numerous gardens which prevents the plant from giving everyone the satisfaction they seek in its cultivation. In many places it gives only a few flowers, while in others it fails to bloom except in the proverbial "blue moon." In others, happily, it gives a full portion of its brilliancy, and it is difficult to conceive of anything more glowing in April and May than the sight of a clump of *Anemone fulgens* in full bloom. The ideal conditions for *Anemone hortensis* are a loamy soil with the addition of a little lime; a half-shady position and moisture in the soil, though with ample drainage. But these do not always spell success, especially in the colder gardens north of the Humber and the Tweed. It appears needful that the tubers of *Anemone fulgens* should be properly ripened after flowering is over, and, if they are left in the earth this maturing process is difficult to secure in partial shade and with moisture in the soil.

From experience I am satisfied that some modification of the orthodox treatment is advisable in colder districts, and this should take the form of a sunnier place with some artificial watering, if need be, during the growing and flowering period.

It may be added that *A. fulgens* is liable to several diseases, and should these make their appearance the infected tubers should be burned.

Although autumn is the best time for planting *A. fulgens* the tubers may be set in spring, about two inches being a suitable depth. *A. fulgens* major is an excellent form, but the double one known sometimes as *A. Pavonina*, although a better flowerer than the others, is hardly worth growing in comparison.

JANKAEA HELDREICHII.

THE lamented death of Mr. Reginald Farrer recalls many of the treasures of his garden at the Craven Nursery, and among them the rare *Jankaea Heldreichii*, which he succeeded in growing so well there although numbers of other people failed with this species. It was a great pleasure to me to see it so happy in its nook in Mr. Farrer's rock garden, for I have tried it myself, but my plants had shared the fate which befell so many attempts under ordinary conditions in a climate such as ours. Mr. Farrer informed us of his success in *My Rock Garden*, and it was a great delight to see for oneself that there was no exaggeration or embellishment in that delightful account of this little Alpine which has leaves "brilliantly silvery with a felt of fine white down." There it was happy in the "cunning cavity," stuffed with rough peat into which it had been set some years before. It was seen there with its flowers "of rare and brilliant loveliness," of light violet and showing how happy it was in that cavity, the secret of its success being that it never received a drop of surface moisture, which is its bane in our climate. This success with the *Jankaea* is only one of many hints as to culture given us by the versatile writer and cultivator of alpine plants who has gone from us all too soon. S. Arnott.

VEGETABLES.

POTATO TRIALS AT BARROW-IN-FURNESS.

A TRIAL of 18 varieties of Potatoes immune to Wart Disease was conducted at Risedale this year. Two pounds of even-sized, well-sprouted sets of Scotch seed of each variety were planted on May 10, and the crop was dug between August 23 and September 20. Resistant Snowdrop was ready for digging first, but was only a week in advance of Edzell Blue, Witch Hill, Dargill Early and Arran Rose. Of the others I consider that only Arran Comrade, King George and Burnhouse Beauty are entitled to rank as second-earlies, all the rest being really main crop varieties. The sets were planted on ground of a clayey nature and rather stony, that has been "made up." It had no special preparation beyond a fair dressing of well-rotted stable manure, when dug in early spring, and the sets were planted in drills five inches deep, 2 ft. 6 in. apart and 14 in. apart in the drills. The amount of ware and small tubers and the total yield in each case are as follow:—

Early Varieties: Edzell Blue, 33 lb., 2 lb., and 35 lb.; Resistant Snowdrop, 31 lb., 3 lb., and 34 lb.; Witch Hill, 28 lb., 4 lb., and 32 lb.; Arran Rose, 24 lb., 6 lb., and 30 lb.; Dargill Early, 24 lb., 5 lb., and 29 lb.

Second Early Varieties: Arran Comrade, 37 lb., 4 lb., and 41 lb.; King George, 32 lb., 6 lb., and 38 lb.; Burnhouse Beauty, 20 lb., 1 lb., and 21 lb.

Late Varieties: The Ally, 51 lb., 2 lb., and 53 lb.; Majestic, 44 lb., 1 lb., and 45 lb.; Lochar, 40 lb., 1 lb., and 41 lb.; Great Scot, 37 lb., 2 lb., and 39 lb.; The Bishop, 32 lb., 2 lb., and 34 lb.; Kerr's Pink, 30 lb., $\frac{1}{2}$ lb., and 30 $\frac{1}{2}$ lb.; Nithsdale, 24 lb., 2 lb., and 26 lb.; Tinwald Perfection, 24 lb., 2 lb., and 26 lb.; Golden Wonder, 20 lb., 1 lb., and 21 lb.; The Duchess, 9 lb., 8 lb., and 17 lb. W. H. Christian, Barrow-in-Furness.

POTATOS INMUNE TO WART DISEASE.

As a result of the Ormskirk Trials 1919-1920, the following varieties have been added to the official list of immune varieties of Potatoes. (The full list of old and new varieties will be obtainable free of charge early in the New Year from the Ministry of Agriculture and Fisheries.)

Early Pink Champion (Findlay).—A second early variety. Tubers round, pebble-shaped; eyes medium-large; skin pink; flesh white; sprouts deep rose; haulm and foliage medium to spreading; leaves small, medium green, leathery appearance. No flowers observed.

Katie Glover (Findlay).—A second early. Tubers round to oval, thick; eyes medium; skin white; deep pink in eyes; flesh white; sprouts white, tinged pink; haulm and foliage regular, dwarf, spreading; leaves medium, medium green. No flowers observed.

Catriona (Findlay).—An early maincrop. (Tested as seedling PU/1, No. 1.) Tubers kidney shaped; eyes shallow; skin white, splashed purple round the eyes and at base end; flesh pale yellow; sprouts violet; haulm and foliage dwarf, spreading; leaves medium, dark green, glossy. No flowers observed.

K. of K. (Findlay).—An early maincrop. Tubers oval; eyes shallow; skin white, splashed crimson, more pronounced round the eyes, especially at rose end; flesh pale yellow; sprouts rose; haulms and foliage upright; leaves small, corrugated, light green. No flowers observed.

Captain Cook (Airey).—A late variety. Tubers round; eyes deep; flesh white; skin white; sprouts purple; haulm and foliage compact, vigorous; leaves medium, medium green. Flowers white.

Crusader (Wilson).—(Tested as seedling 339/3.) A late variety. Tubers kidney shaped; eyes shallow; skin white; flesh white; haulm and foliage tall, upright, vigorous; leaves large, dark green, corrugated. Flowers dropping in the bud.

Seedlings, Purple-Eyed No. 3 (Findlay).—449 (a) 1 (Wilson) and 142/6 (Wilson) were found immune, but not added to the list as they have not been named.

THE FRUIT GARDEN.

AMERICAN BLIGHT.

THE latter part of the summer was very favourable to the spread of American blight. One of the worst attacks in my experience developed on trees of Allington Pippin which had not previously shown more than a few spots of the pest. Probably it spread from some top-grafted trees near by, for such trees are almost invariably affected. The blight on both these and the Allington Pippin has assumed its worst form, the young shoots being involved. A few patches on the stem or main branches are easily put right by painting, strong soft soap and nicotine solution being the most deadly thing I have tried for the purpose. But it is practically impossible to paint all over the young shoots. Many of these will be removed in pruning, of course, and for the rest I shall rely on winter

ing Farleigh Prolific Damson with Orleans Plum the fruits are nearly as large as those of the latter parent and of a blue-black colour. Not only do the trees crop early after planting, but the fruits come in useful for cooking and bottling after Plums are over.

SELECT OUTDOOR PEACHES.

To those who are about to plant Peach trees against east, west or south walls (I prefer the two latter sites) I strongly recommend the following varieties for freedom of crop, handsome appearance and high quality. Too many unsuccessful growers are apt to consider the seasons at fault or that site and soil do not suit the trees, whereas a close observance of the cultural methods adopted by others who are successful will show what is at fault. Not a few growers forget all about their trees after the crop is gathered, until the trees are starting into growth the following spring, when they realise that the roots would have been all the



FIG. 136.—CHRYSANTHEMUM MRS. SPENCER CHICHESTER; FLOWERS YELLOW.
F.C.C., NATIONAL CHRYSANTHEMUM SOCIETY, NOVEMBER 2, 1920. INTRODUCED BY MR. H. J. JONES.

spraying with caustic soda. This certainly reduces the blight considerably, and, if followed by careful painting of any spots that appear during the next summer, practically overcomes the attack, though patches of it are always likely to appear in future years. Curiously enough I have never seen the root form of the blight in my plantations. Possibly being far south, where the winters are usually mild, the insects do not need to leave the branches. *Market Grower.*

BULLACE THE LANGLEY.

THOSE who have not grown this Bullace should plant a standard tree or two. Raised by cross-

better if they had received copious supplies of water during the autumn and that the cutting away of wood that had carried the previous crop would have been all the better if done after the fruit was gathered.

The desirable varieties are:—Peregrine, which ripens its deeply coloured fruits early in August and is therefore a useful variety; Grosse Mig nonne, large, round, high-coloured and excellent in flavour, ripe at the end of August; Dymond, an August Peach having the qualities of freedom, size, colour and flavour to recommend it; Violette Hative ripens in September and has all the good points of a desirable Peach. Late Devonian, large, handsome, of good flavour and ripening in September. *E. M.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Aponogeton distachyon.—By some mischance, the article on the Lily ponds at Wisley which appeared over my name on p. 249 gives the impression that this plant does not do so well as it might here owing to the presence of chalk in the water. Actually, of course, the opposite is the case, as the flourishing condition of the adjacent Rhododendrons proves, while we have recently had evidence of the extent to which the plant is at home. During August the pond was emptied and cleaned out, seeds which had lain dormant in the mud being released. On refilling the pond with water these germinated, producing plants which have been in flower for more than a month. Seedlings have also appeared in the heaps of mud left temporarily on the bank. *A. E. Sims, Wisley.*

November Vegetables (see p. 266).—Anything from the pen of Mr. E. Beckett receives the closest attention from vegetable growers, consequently it may appear presumptuous on my part to criticise his remarks on Parsnips. Concerning varieties, Tender and True and Student are both good and largely grown, but Ellacombe's Improved is also a reliable variety. New Intermediate we have found matures quicker than either of the above, is a shapely root, about midway in shape between the Turnip-rooted and taper-rooted sorts, and gives a heavy yield. During the war this variety, left thickly in seed lines and used when half grown, as is the way with Carrots, gave us an additional supply of vegetable food. The Turnip-rooted variety is well worth growing where the soil is too shallow for longer roots. During the spring of 1917, when sowing could not take place until the end of April, owing to weather conditions, it was observed that the roots were only slightly affected by rust around the collar—much less so than those from seed sown in February. The same result is noticeable this season; from seed sown in May roots developed quickly, have little rust, and we have been using the crop for several weeks. I believe the Ministry of Agriculture and Fisheries advise late sowing. Probably Mr. Beckett will kindly place us under further obligation by saying how this rust may be prevented, as the advantage of sowing in February gives more time for other work in the later months. *J. E.*

Early-flowering Chrysanthemums.—To the list of single-flowering Chrysanthemums given on page 253, the old yellow variety, Kitty Bourne, may well be added, as no variety within my knowledge produces such a wealth of blooms per plant. Strong plants growing in 10-in. pots will produce forty to fifty shoots, each bearing from three to six small but shapely flowers, of the richest buttercup-yellow. Roupell Beauty is another good variety, its deep maroon flowers showing up well under artificial light; it is a good variety for disbudbing. The variety Mrs. W. Buckingham is a favourite with many, and a vase of its soft pink flowers, almost identical in colour with the popular La France Rose, is always much admired. *John Boxall, Perry Croft, Malvern.*

Begonia fuchsioides.—At one time this beautiful Begonia was cultivated for winter flowering, but it is now seldom seen, its place being taken by many of the newer varieties of winter-flowering Begonias. As a pot plant it cannot compete with the newer varieties, but is seen at its best when planted out, either to furnish a pillar or the back wall of a warm greenhouse. It will furnish a wall ten or twelve feet high, and make growth a yard or more across, producing its bright scarlet flowers in great profusion. *J. Coult.*

Viburnum rhytidophyllum.—As remarked by Mr. Bayford (see page 277), this Chinese evergreen is a handsome shrub. A specimen, some 4 feet high, planted on the Yorkshire Wolds in 1918 in an open, sunny position in medium loam, has, so far, failed to carry berries in autumn. The flower heads form somewhat late in the season and, unfortunately, the flowers do not

open properly; however, the broad, lanceolate leaves, with their dense dun-coloured tomentum on the undersides, are attractive. I have seen *Viburnum rhytidophyllum* well set with berries in less exposed localities. *Sidney Legg, Warton Priory Gardens.*

Rhubarb Failure in 1920 (see p. 279).—I experienced the same failure with Rhubarb this season as *Caltha*. The crowns, planted three years ago, are growing in a deep, rich loam, which had been well enriched with manure previous to planting the Rhubarb. Last season I had a magnificent crop, plenty of the stems weighing 1 lb. each after the blade had been cut off. This year the leaves were all below average size and not very plentiful. The summer, although dull, was deficient in rain, and to this fact, combined with the plants growing freely last autumn, after they had ripened and apparently finished their season's growth in August, I attribute the failure. *Essex.*

Grapes at the Sheffield Show.—The Alicante Grapes which won the first prize at the Sheffield exhibition on the 12th ult., and also those of Gros Colmar and Gros Maroc, which were awarded a special Silver Medal, were all cut from vines planted one year and nine months previously. Other varieties, including Muscat of Alexandria, Mrs. Pinco, Black Hamburg and Madresfield Court, all finished up to show standard, and the vines averaged seven bunches each. Canon Hall failed to set fruits. Is this a record in young vines fruiting? Previous to planting them in the newinery, they were grown out-of-doors in ordinary garden soil. *W. J. Irvine, Bradley New Gardens, Grimsby.*

Eucalyptus Gunnii.—With reference to my note on *Eucalyptus Gunnii* (p. 256), I wish to make a correction in the date of sowing. I gave the year of sowing as 1906 instead of 1896, that is ten years previously. *Thos. Larkbey.*

An Extraordinary Broad Bean.—I enclose a photograph of a Broad Bean which was grown in a cottager's garden at Ringsdale, Ashridge, Berkhamsted. It grew from one of numerous seeds sown in the ordinary way in early spring. This particular plant continued to grow in height until cut by the frost during the first week of November, when it had attained the extraordinary height of 16 feet, and was a veritable "Jack's Bean Stalk." I was informed that in this place there has been no change of Broad Bean seed for the past 27 years. Unfortunately, there were only four pods on this giant stalk. *D. D. Robertson, Ashridge Gardens, Berkhamsted.*

[The photograph was not suitable for reproduction. It showed this extraordinary Broad Bean when it had reached a height of 15 ft. 8 in.—Eds.]

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

THURSDAY, NOVEMBER 4.—Members of Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, Dr. R. N. Hartley, J. Howes, D. McLeod, E. W. Thompson, J. Thrower, and H. Arthur (secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Laelio-Cattleya Britannia var. *The King*, a very fine flower, sepals and petals white, richly coloured lip; *Laelio-Cattleya Fasyana* (C. Fabia × L.-C. Schultzeana), a richly coloured fine flower of good substance; *Cattleya St. George* var. *Moncunia*, a richly coloured variety of this grand *Cattleya*, flowers of fine shape, from S. GRATRUX, Esq.

Brasso-Laelio-Cattleya Muriel var. *Joyce Hanmer* (B.-C. Maroniae × L.-C. Feronia), a magnificent variety, flowers exceptionally large, of fine shape, sepals, petals and lip rose colour, throat deep yellow; *Laelio-Cattleya Linda Regina* (C. aurea × L.-C. Arachne), fine form, sepals and petals deep peach red, lip deep n-agenta, throat rich orange, from A. HANMER, Esq.

Cattleya Edithae (C. labiata Mrs. E. Ashworth × C. Dionysius alba), sepals and petals white, lip richly coloured, with white margin, from P. SMITH, Esq.

AWARDS OF MERIT.

Brasso-Cattleya speciosa (B.-C. Digbyano-Mendelii × C. Schrödera), *Odontoglossum crispum Mona Lisa*, *Cypripedium Eurymanii* (Euryades × Beekmanii), and *Cattleya Fabia Royal Beauty*, from S. GRATRUX, Esq.

Cattleya Enid alba var. *Jewel*, from Mrs. GRATRUX.

Cypripedium Pontifex (Nubian × Lord Wolmer), from Rev. J. CROMBLEHOLME.

Brasso-Cattleya Menda Neville var., from A. FRANCOIS, Esq.

AWARDS OF APPRECIATION (FIRST CLASS).

Odontoglossum eximium xanthotes var. *Snowden* and *Odontoglossum crispum Prince Arthur*, from A. HANMER, Esq.

CULTURAL CERTIFICATE.

To Mrs. A. CONINGSBY, for *Cypripedium insigne Sanderae*.

GROUPS.

S. GRATRUX, Esq., West Point (gr. Mr. J. Howe), was awarded a Gold Medal for a group of *Cattleyas* and *Cypripediums*.

A. HANMER, Esq., Burbage, Buxton (gr. Mr. G. Giles), staged a group for which a Large Silver Medal was awarded.

Capt. W. HORRIDGE, Bury (gr. Mr. Coningsby), staged a group for which a Large Silver Medal was also awarded.

Dr. R. N. HARTLEY, Leighton House, Wigan, was awarded a Silver Medal for a group of *Cypripediums*.

The Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. E. Marshall), was also awarded a Silver Medal for a group of *Cypripediums*.

Messrs. CYPHER AND SONS, Cheltenham, were awarded a Silver Medal for a group of *Cypripediums*.

THURSDAY, NOVEMBER 18.—Members of Committee present:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, A. Hanmer, Dr. R. N. Hartley, J. Howes, A. Keeling, D. McLeod, Dr. Paul, and E. W. Thompson.

Awards.

FIRST-CLASS CERTIFICATES.

Laelio-Cattleya Linda var. *Joyce Hanmer* (L.-C. Arachne × C. aurea), large flower, fine shape, very distinct colour; *Laelio-Cattleya Princess Royal albens* (L.-C. Fabia × *Hardyana alba*), sepals and petals broad, white, fine round lip; *Cypripedium Elsie Edgemoore* var. (Lady Dillon × *Hermes*), from A. HANMER, Esq.

Cattleya Marietta (C. Frau M. Beyrodt × *chocoensis alba*), very pretty white flowers, lip deep magenta; *Sophro-Cattleya Doris*, *Gratrix's* var., one of the finest varieties, very fine colour, from S. GRATRUX, Esq.

Brasso-Laelio-Cattleya Muriel var. *majesticum* (B.-C. Maroniae × L.-C. Feronia), large flower of fine shape and very good colour, from P. SMITH, Esq.

Cypripedium James O'Brien var. *Jeannie Hortley*, from Dr. R. N. HARTLEY.

AWARDS OF MERIT.

Laelio-Cattleya Renown (L.-C. Statteriana × L.-C. St. Gothard), *Laelio-Cattleya Burbagei* (C. Venus × L.-C. Illustris), *Brasso-Cattleya Front Line* (niveum × *Clinkaberryanum*), and *Cypripedium Mirum*, *Edgemoor* var., from A. HANMER, Esq.

Sophro-Laelio-Cattleya Moonbeam (L.-C. Martinettii × S.-L. Marabon), *Brasso-Cattleya Enchantress albescens* (B.-C. Digbyana Mendelii × C. Fabia White Queen), *Cypripedium Caryville* (Mrs. Cary Batten × *villosum aureum*), from S. GRATRUX, Esq.

Cattleya Princess Royal var. *splendida*, from Mrs. GRATRUX.

Odontioda Syringa (Odm. *illustrissimum* × Oda. Joan), from the Rev. J. CROMBLEHOLME.

AWARD OF APPRECIATION (FIRST CLASS).

Lycaste Mrs. Gratrix (parentage unknown), from S. GRATRUX, Esq.

CULTURAL CERTIFICATE.

To Mr. G. GILES, for *Cypripedium* *Dreadnought*.

GROUPS.

S. GRATRUX, Esq., West Point (gr. Mr. J. Howes), staged a group of Cattleyas and Cypripediums for which a large Silver-Gilt Medal was awarded.

A. HANMER, Esq., Burbage, Buxton (gr. Mr. G. Giles), was awarded a Large Silver Medal for a group.

The Rev. J. CROMBLEHOME, Clayton-le-Moors (gr. Mr. E. Marshall), was also awarded a Large Silver Medal for a group composed principally of Cypripediums.

Dr. R. N. Hartley, Leighton House, Wigan, was awarded a Silver Medal for a group of Cypripediums.

Messrs. CYPHER AND SONS, Cheltenham, staged a group of Cattleyas and Odontodas to which a Large Silver Medal was awarded.

BRITISH CARNATION.

ANNUAL MEETING.

DECEMBER 1.—There was a small attendance at the annual general meeting of this society held at the R.H.S. Hall on the evening of the show. Mr. J. S. Brunton presided, and others present included Messrs. H. T. Mason, W. H. Page, E. F. Hawes, W. E. Wallace, C. Engelmann, R. Pinches, M. Allwood, G. Allwood, F. Jordan, A. E. Usher, and A. W. Metcalfe.

In proposing the adoption of the annual report for the society's year now ended Mr. Brunton remarked on the regrettable fact that a large number of subscriptions remained unpaid, and this was not set off by the addition of fifty-five new members, which in itself was a most satisfactory indication of increased interest in the Carnation. The twenty-two new varieties registered during the past year were, he believed, a record both as regards numbers and also in quality, for all were especially meritorious novelties. Last year's conference, when Mr. F. Jordan read a paper, was, he said, most successful. Although not mentioned in the report Mr. Brunton remarked that the labours of the Classification Committee were proceeding and it was hoped to evolve a satisfactory method.

The annual report was unanimously adopted, but the statement of accounts was the subject of much discussion. Mr. Pinches, who was one of the auditors, suggested that too great a proportion of the society's income was spent on printing and that it was either too extravagant or the subscription was too low. He found that 102 members had paid 5s. per year and to these the value of printing was 8s. 6d. each. Mr. Hawes tendered the secretary's explanation of the item "Collected by Secretary," and advocated an increased income and an augmented prize fund as essential to success.

Mr. H. T. Mason remarked on the balance-sheet and hoped that it would be found possible to keep the expenditure for printing more proportionate in the future. The secretary explained that the large value of unrepresented cheques was due to the late sitting of the finance committee. The balance in favour of the society—there are no apparent liabilities—is £39 2s. 1d., and the statement of accounts was adopted.

The customary thanks to the officers and committee were accorded, and the former were re-elected, as also were the committee with the exception of Messrs. H. Mount, T. Page and J. A. Weston, in whose places Messrs. T. Pate-man, A. W. Metcalfe and W. Holder were elected.

Two minor alterations to rules were made which permit greater freedom to the committee in the choice of dates for the winter show.

CONFERENCE.

There was quite a good attendance at the conference, which was held during the afternoon of the show day, December 1. Mr. J. S. Brunton presided, and Mr. L. Cook, the hon. treasurer of the society, initiated a general discussion on culture and other matters concerning greenhouse Carnations.

When considering a soil suitable for the needs of the Carnation Mr. Cook commented on the diversity of opinion held by various growers as to the admixture of leaf-mould. Many obtained satisfactory results without using leaf-mould, but in his opinion it was best not to lay down hard and fast rules, but to be guided by the nature of the loam that happens to be available, but he held that any soil deficient in humus should have leaf soil or some similar material added to it, and particularly so during the early stages of the plant's development. For the final potting he recommended four parts loam, one part rotted stable manure, half a part sand and mortar rubble and half a part leaf soil.

There was also, he remarked, various opinions as to the most satisfactory time for taking cuttings, and in this respect he held the view that less depends on exact time than on after treatment and on the type of cutting obtainable. When Carnations have to be grown in quantity he preferred inserting the cuttings during January, February, or even March, rather than in Autumn, because better positions and more space can be allowed the young stock than is the case when autumn rooting is practised.

In treating on the cultivation of the plants during the summer Mr. Cook said that the grower should be guided by climatic conditions. In the relatively hot and dry eastern counties the plants usually thrive best out-of-doors, but in the west, where the summer rainfall is heavier, many growers favoured cultivation under glass; but whenever the outdoor system is practised he strongly advised having means of protection from heavy rains ready at hand.

Carnation rust, which a few years ago was the dread of so many growers, was not now to be feared. Mr. Cook said he had introduced leaves covered with rust into a propagating frame with his own cuttings and these have not been affected. This, he contended, tends to prove that rust is due to improper cultivation. The conditions that induce rust are overcrowding in a close atmosphere.

Mr. Cook next commented on the form of Carnation flowers and expressed the decided opinion that the varieties that were best for winter blooming were those of somewhat loose form and with petals of serrated or straight-cut edge. The perfectly formed full flower with rounded petals is rarely satisfactory for winter blooming. The long, tight calyx is less liable to split than is the short calyx, but it must be remembered that the long calyx generally contains a smaller flower than does the rounded, loosely made calyx.

The vexed question of classification next came under review, and Mr. Cook expressed his opinion that it would be found impossible to classify Carnations other than by colour. An effort was being made, he said, to classify the Carnations according to the habits of the plants, but this method presented immense difficulties. It was proposed to take certain popular varieties such as Carola, Britannia, and Enchantress, as types of the tall, grassy and bushy habits, and group the various varieties under them, but he had found that the habit of a Carnation plant was far from being a constant factor, and that it varied considerably under different conditions. So that he felt that any method of classification by habit would confound the public instead of being a help.

THE DISCUSSION.

Then followed an interested and spirited discussion, in which the principal speakers were Messrs. Chandler, A. E. Usher, E. F. Hawes, E. W. Bishop, and W. H. Page.

It was generally agreed that it was not advisable to allow the perpetual Malmaisons to be shown in the same classes as the true perpetuals, and that the time had arrived when separate classes should be arranged for the former.

Opinions on leaf soil were varied, but the majority favoured its use for the earlier stages of the plant's development, and Mr. Hawes strongly recommended rotted spent hops as an excellent substitute when first-rate leaf soil was

not available. It seemed that the speakers who did not favour the use of leaf soil in the compost for the final potting used a larger proportion of grit than is usual.

With regard to classification Mr. Usher strongly recommended the adoption of colour classification as instituted by the National Sweet Pea Society as being the only practicable method, while Mr. Page admitted that the Classification Committee has already found the difficulties much greater than was anticipated. His personal opinion was that it should be possible to classify under relative productiveness, from habit and rate of growth. Mr. Hawes suggested lists of varieties suitable for various purposes such as winter flowering and summer bedding.

SMITHFIELD CLUB.

THE usual annual exhibition of fat cattle was held during the present week, at the Agricultural Hall, Islington. The exhibition was visited by H.M. King George and by H.M. the King of Denmark, who were present on the opening day and were greatly interested in the wonderful animals exhibited. In addition to cattle, pigs and poultry, the exhibition includes a remarkable display of all kinds of machinery used in connection with the agricultural industry.

In the immense gallery, most of the leading seedsmen provided imposing and instructive exhibits of their particular specialities in root crops. On some occasions, many of these exhibits have included specimens of garden crops, but this year there was comparatively little of direct horticultural interest.

Messrs. SUTTON AND SONS contributed an imposing display of magnificent Mangels and Swedes, together with an interesting selection of such garden crops as the Sutton Globe, Ailsa Craig and Crimson Globe Onions, in addition to model Parsnips and capital Tomatoes. The five specimens of Ailsa Craig Onion averaged 3 lb. 12 oz. each. Messrs. J. CARTER AND CO. displayed agricultural roots, and a large selection of grasses suitable for pastures or lawns. An interesting item in their exhibit was the open case in which the method of testing the germination of seeds was demonstrated. Messrs. J. K. KING AND SONS showed wonderful examples of their Green Globe Turnip, other root crops, and a selection of seed Potatoes. Messrs. E. W. KING AND CO. made a special feature of seed Potatoes, Anglian Mangels, seeds of various kinds, and the useful Intermediate Beet. Messrs. TOOGOOD AND SONS were large exhibitors of seed Potatoes and farm roots, and Messrs. HARRISON AND SONS had an exhibit of grasses and roots, with their new Brussels Sprout named. Three Cross as a special feature. This latter appears to be a very fine variety.

Seed Potatoes were exhibited by numerous firms and in many instances samples of Scotch seed of a few leading varieties were displayed. Messrs. PATULLO, HIGGS AND CO., Dundee; Mr. G. R. SHARPE, Blatchford, Perthshire; Mr. W. J. CAMPBELL, Edinburgh; Messrs. W. DENNIS AND SONS, Kilton; Mr. J. A. GRANT, West Rarchie; Messrs. KENT AND BRYDON, Darlington; Mr. J. A. GARDINER, Perth; Mr. I. POAD AND SONS, Messrs. CANNELL AND SONS, Loddon; Mr. R. PATEMAN, Edinburgh; Messrs. LITTLE AND BALLANTINE, and others, were exhibitors of seed Potatoes.

Messrs. GARTON, Liverpool, showed beautiful specimens of their new pedigree Wheats, Oats and Barley, and Messrs. DICKSONS, Chester, exhibited cereals and grasses. Messrs. E. WEBB AND SONS had a large exhibit of their specialities in farm crops and a selection of seed Potatoes. Messrs. FIDLER AND SONS, Reading, were the largest exhibitors of Potatoes and presented very fine samples of Majestic, Great Scot, Kerr's Pink Ally, and Towser, the last a red-skinned, round variety.

Only one exhibit of home-grown fruit was forthcoming. This was from Messrs. W. SEABROOK AND SONS, Chelmsford, and consisted of excellent specimens of Hornead Pearmain, Cox's Orange Pippin, Allington Pippin, King of the Pippins, Peasgood's Nonsuch, and a few other popular sorts.

MARKETS.

COVENT GARDEN, December 7th.
Fruit; Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Apples, English,	Brazil nuts,
—Bramley's	per cwt. .. 132 6-145 0
Seedling .. 20 0-25 0	Chestnuts, per
—Northern	50 kilo bags .. 35 0-55 0
Greening .. 17 0-18 0	Cob nuts .. 1 3-1 5
—Wellington .. 24 0-25 0	Dates, Tuois, per
British Columbian,	doz. cartons .. 8 6-9 0
—Jonathan .. 21 0-—	Grapes, Muscats,
—McIntosh, red .. 20 0-—	special per lb. 6 0-7 0
—Wagner .. 19 0-20 0	best .. 3 6-5 0
—Newtown .. 23 6-—	—Canon Haro .. 3 6-7 0
Pippin .. 23 6-—	—Gros Maroe .. 1 3-1 9
Ontario, Northern	—Alicante .. 2 0-3 0
Spy .. 21 0-23 6	—Gros Colmar .. 1 9-4 0
—Golden Russet .. 21 0-23 6	—Almeria, per brl. 40 0-50 0
—Jonathan .. 19 0-20 0	Lemons—
—Baldwin .. 19 0-20 0	—Naples 300's .. 30 0-35 0
—Wagner .. 19 0-20 0	—Messina .. 20 0-24 0
—Greening .. 19 0-20 0	Oranges Jamaica 32 0-—
—Barrels of above 50 0-65 0	126's-250's .. 25 0-28 0
Oregoo (We natchee)	—Denia 250's .. 25 0-30 0
—Wagner .. 19 0-20 0	—300's .. 25 0-32 0
—Jonathan .. 21 0-22 0	—360's .. 25 0-28 0
—Newtown .. 21 0-22 0	Pears, Californian
Bacanas, singles 20 0-32 6	Winter Nells,
—doubles .. 30 0-35 0	per case .. 30 0-32 6
—giants .. 35 0-40 0	

REMARKS.—This week has witnessed an increase in activity in nearly all departments, due probably to the proximity of Christmas. The demand from the provinces in particular has, to some extent, brightened matters. Considerable quantities of Apples are arriving from Nova Scotia, British Columbia, Oregon, Ontario, etc., in time for the Christmas trade, and with prices at a reasonable level the fruits are selling fairly readily. The absence, also, of any great quantity of home-grown Apples is, of course, further favourable to them. A few fruits of Bramley's Seedling, Dumelow's Seedling (Wellington) and Northern Greening, have been on offer this week, these of first grade, of the two first varieties, realising full control prices. English Tomatoes are scarcer, consignments for the most part being soft in condition, and of poor quality. We are now depending on the Canary Islands for Tomatoes, which, so far this season, have generally been in excellent condition. English Grapes have been somewhat restricted in supply, although it is expected that there will now be larger quantities available. Oranges are in good supply. A shipment of Pines is due, and should meet an eager demand in view of the present scarcity of these fruits. The Nut trade continues active, all kinds moving with freedom. Forced Sea-kale is now available. The first consignment of forced English Asparagus, from Devonshire and Middlesex, has been on offer this week. Trade in Mushrooms is more settled, and prices are steady. Forced Beans are firmer in price, as a result of diminishing supplies. Guernsey New Potatoes are a slow trade, although their prices are comparatively reasonable. Green Vegetables remain fairly abundant at moderate prices. The Potato trade shows little or no variation.

Cut Flowers, &c.; Average Wholesale Prices.

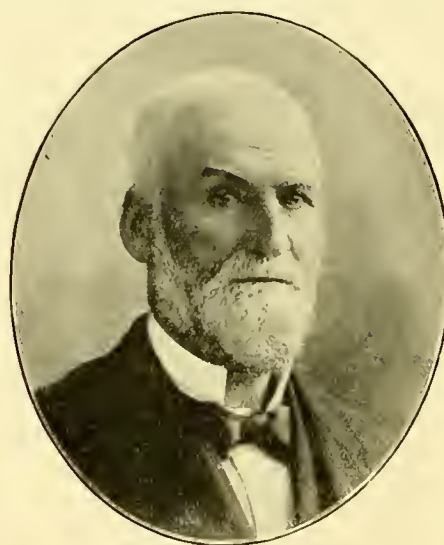
s. d. s. d.	s. d. s. d.
Bouvardia, white,	Mimosa, French
per doz. bun. 12 0-15 0	(Acacia)
Camellias, per	per doz. bun. 12 0-18 0
box, 12's, 18's	Narcissus, French,
2 6-3 0	per pad. ..
Carnations, per	—paper-white .. 8 0-10 0
doz. blooms,	—Soleil d'Or .. 8 0-10 0
best American	—paper-white,
var. .. 2 6-4 6	per doz. bun. 2 6-3 0
Chrysanthemums,	—Guernsey, Soleil
white, spray,	d'Or, doz. bun. 10 0-12 0
per doz. bun. 12 0-24 0	Orchids, per doz.,
—bronze .. 15 0-24 0	—Cattleyas 15 0-18 0-30 0
—yellow .. 15 0-18 0	—Cypripediums,
—pink .. 18 0-24 0	per doz. blooms 2 6-3 6
—white, per doz.	Pelargonium,
blooms .. 3 0-8 0	double scarlet,
—pink .. 5 0-6 0	per doz. bunch 8 0-10 0
—yellow .. 3 0-6 0	—white .. 9 0-10 0
—bronze .. 3 0-6 0	Poinsettias, per
—single disbudded,	doz. blooms .. 18 0-24 0
per doz. blooms 3 0-6 0	Richardia (Arums),
white & coloured,	per doz. blooms 8 0-12 0
per doz. bun. 1 5 0-24 0	Roman Hyacinths,
Forget-Me-Not,	per bunch .. 1 6-2 6
per doz. bun. 15 0-18 0	Roses, per doz.
Lapageria, per	blooms—
doz. blooms 4 0-4 6	—Ophelia .. 4 0-12 0
Lilium lancifolium	—Richmond .. 4 0-10 0
album, per doz.	—Sueburst .. 4 0-8 0
blooms .. 2 0-3 0	—Niphotos .. 3 0-4 0
—long, per bun. 3 0-4 0	—Molly S. Crawford 2 6-4 6
—rubrum, short,	—Madame A.
per doz. blooms 0-3 0	Chateaux .. 4 0-8 0
Lilium longifolium,	—Melody .. 4 0-12 0
per bunch .. 7 0-8 0	Violets—
—short, per doz. 8 0-9 0	—Princess of Wales,
Lily of the Valley,	per doz. bun. 5 0-8 0
per bunch .. 5 0-8 0	—Parma, French,
Marguerites, yellow,	large bunch .. 6 0-7 0
per doz. bun. 3 0-4 0	
French, Yellow, 3 0-4 0	

REMARKS.—There is very little change to record in this department from last week. Chrysanthemums remain the chief source of supply, and up to this morning all "bunch" Chrysanthemums had been sufficient to meet all requirements. Good disbudded blooms are very scarce. White sorts are the most plentiful. Small consignments of Tuxedo (bronze) and Pankouke (white)

have been offered during the past week; these are generally the last varieties of the Chrysanthemum season. Carnations (white) have been a shorter supply, but coloured sorts are more plentiful. The principal varieties are Beacco and Britannia (scarlet), Carola, and Triumph (crimson); the leading pink sorts are Enchantress, Lady Northcliffe, Mayday, Winsor, Mrs. Ward, Mrs. Walter Hemus, and Seedlings, mainly salmon-pink, which meet with a good demand. Roses, with the exception of Mme. Abel Chateaux, are new showing signs of finishing until the new crop commences again. Prices are high for best blooms of good red and yellow sorts, such as Liberty, Richmond, Melody, Ophelia, and Sueburst. Trade in Liliums remain unchanged, and the supply has been sufficient for the demand. The supply of Lily-of-the-Valley remains short, and consignments are uncertain. Poinsettias are the newest addition in this department; although excellent in quality, there is not much demand for these flowers at the present time. Orders are already being placed for Christmas. The supplies from the South of France and the Channel Islands are gradually increasing, white and yellow Narcissi being the chief supply. Parma and single Violets are arriving in a better condition. Small consignments of white Lilac are being received from Holland. A good supply of Mistletoe has already reached the market from Cornwall and France.

Obituary.

William Dick.—Mr. William Dick, who passed peacefully away at his residence, Belsito Lodge, Inchicore, Dublin, November 19th, and whose death was recorded in our issue of November 27th, was born on June 6th, 1830, at Keith, Banffshire, where his father held the post of overseer on the Duke of Fife's Braemar estate.



THE LATE WILLIAM DICK.

In early life he was apprenticed at Gordon Castle, going from there to Dalkeith Gardens under Mr. David Thompson, gardener to the Duke of Buccleuch. At the end of 1859 he was appointed gardener to the Marquis of Londonderry, Wynyard Park, Stockton-on-Tees, and after ten years' service there he left to occupy a similar position at Canford Manor, Dorset, the seat of Sir Ivor Guest. Seven years later, through the influence of Sir Joseph Hooker, Director of Kew, and because of his eminent suitability for the post, he was appointed Bailiff of the Phoenix Park, Dublin, and after 23 years' notable service he retired at the age of seventy on a pension from the Irish Board of Works. During his more active life, Mr. Dick was a frequent contributor to the horticultural Press under the *nom de plume* of "The Squire's Gardener." Above the average height, of distinguished appearance, and gifted with more than ordinary attainments in his vocation, Mr. Dick was a notable personality in the Irish gardening world, and now that he has passed away "full of years" it is pleasant to recall various little incidents which revealed the high moral standard he lived up to and that rare old-world courtesy and dignified manner which went to make the true gentleman. The funeral took place on November 22nd, at Castleknock, co. Dublin.

ANSWERS TO CORRESPONDENTS.

GENTIANA ACAULIS: A. W. The Gentianella can be grown well without a moraine, though it would doubtless do quite well there, as does also its near ally, *G. excisa*. *G. acaulis*, however, is worthy of treatment on a more generous scale than most moraines admit of, and is seen to best advantage as spacious edgings or broad masses. In many ways it is an exceptional plant, particularly in its likes and dislikes. For example, it is perfectly content in soils of many diverse kinds; the red loams of some parts of Devon and those usually overlying the red sandstone, while equally happy—and probably even more floriferous—in chalky or calcareous loams, as in lighter, warmer and more sandy soils, and others of a peaty nature. The classes of soils that it appears to dislike are those of a close tenacious character. In these the plant exists, but does not produce rosettes of flowering size. In your district the heavy soil is probably opposed to success, and if you desire to specialise with this Gentian the best way would be to prepare a suitable soil and position. The plant delights in full sun, and shade is inimical to its well being. If a heap of old potting soil in which loam, peat, leaf soil and sand enter freely is available you have in it the basis of success. To such a mixture add air-slaked lime at the rate of a half peck to a barrowful. A foot or fifteen inches depth of this, with good drainage below, should suffice. Firm soil and firm planting are essentials, as is also a close association of all growths with the soil. Plants whose growths sprawl upon the surface and are out of touch with the soil are never a success. The planting of big clumps intact is wrong. Three or six growths arranged compactly at one level are amply large for planting; while strong single growths freely inserted on a 2-feet wide area make the best edgings. September or October is the best period for planting, though the autumn generally is good. Spring is less good for the work, and flowering time the worst of all.

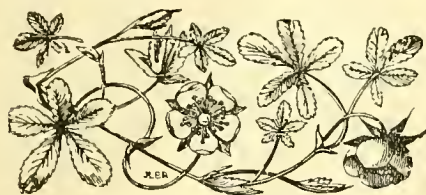
GRASS MIXTURE FOR A CRICKET GROUND: H. B. The following is a good mixture of Grasses suitable for sowing on a cricket ground:—*Lolium perenne* Suttonii, 50 lb.; *Poa pratensis*, 11 lb.; *Cynosurus cristatus*, 11 lb.; *Festuca rubra*, 11 lb.; and *Trifolium repens*, 1 lb. This quantity is sufficient for an acre, but do not sow until the last week in March.

MOSS ON HARD TENNIS COURT: Tennis. It is difficult to understand why Moss remains on your court in spite of its being squeezed and brushed every day. Such treatment ought to be sufficient to keep the surface quite free from Moss. As it would damage the balls and might be dangerous to players to use an ordinary type of weed-killer, the use of agricultural salt appears to be the only alternative. This, being deliquescent, might also assist in keeping the court moist during dry weather. Apply the salt at the rate of four ounces per square yard while the weather is dry.

NAMES OF PLANTS: W. *Eucalyptus populifolia*.—L. S. A. *Ornithogalum thyrsoides*.—P. T. *Santolina incana*.

VINES UNSATISFACTORY: F. B. Judging from the samples of growth sent, your vines are past recovery, or, at least, if they did partially recover it would take a longer time and the results would not be so satisfactory as starting afresh with new vines and new soil. Nothing you could do to the parts above ground would remedy the evil, for the principal fault is at the roots. The past season has not been favourable for Grapes in unheated houses in the most genial localities, but in your climate they could hardly be expected to succeed. It is not safe to use caustic lime with sulphur in a house where the vines are in active growth. For treatment of mildew see *Gard. Chron.* for November 13th, p. 246.

Communications Received.—A. D. C.—G. R.—H. J. W.—T. J. H.—H. F. L.—J. K. B.—W. R.—J. V.—W. M. M.—P. A. R.—C. E. W.



THE Gardeners' Chronicle

No. 1773.—SATURDAY, DEC. 18, 1920.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, December 15 10 a.m.: Bar, 30.4, temp. 35°. Weather—Dull.

Rust Resistance in Wheat.

The rusts which attack Wheat are many, and the problem of breeding races of Wheat which shall be resistant to all kinds of rusts is correspondingly difficult. Biffin's classical experiments give hope, however, that, despite the difficulties, the problem may be solved. As is now well known, he showed that resistance to "Stripe Rust" (*Puccinia glumarum*, Erikss and Henn) is a recessive character and that rust-resistant plants produced in the second generation of a cross between a susceptible and a resistant variety bred true to rust resistance. Further experiments on these lines have been made by Nilsson-Ehle, who has shown that among the descendants from a cross between "susceptible" and "resistant," some are to be found which possess more marked resistance and others which show more marked susceptibility than one or the other parent. Hence it would appear that the character for susceptibility is not simple, but complex. Having regard to the enormous losses which are caused by Black Stem Rust (*Puccinia graminis*), experiments are

now being made* with the object of producing races of Wheat which shall prove resistant to this disease. In the course of these experiments it has been found that different races of the rust fungus exist which differ in their powers of attacking a given race of Wheat, and it is, therefore, evident that the task of finding a completely resistant strain and of proving its resistance to each and every race of *Puccinia graminis* is likely to prove long and arduous. Nevertheless, there is one promising fact, namely, that an Indian Emmer Wheat (*T. dicoccum*) has been found which resists the attack of all the biological forms of *Puccinia graminis* which have as yet been isolated. The authors' experiments consist in crossing Marquis with resistant Durum and resistant Emmer Wheats. The first difficulty encountered in the investigations was one general in hybridisation researches, namely, sterility. The pollen of F_1 crosses between Marquis and Emmer or Durum showed a considerable number of shrivelled and abortive grains—in one case so many as 37 per cent. Similarly a measure of sterility, as indicated by barren florets, was exhibited with respect to seed formation. An investigation of the infection by a known race of *Puccinia graminis*, of the parents and the F_1 generation brought to light the remarkable facts that, whereas the first generation of a cross between resistant Durum and susceptible common Wheats exhibits susceptibility, the first generation of a cross between resistant Emmer and susceptible common Wheats, is resistant; in other words, in the cross between Durum and common Wheat susceptibility is a dominant character, whereas in the cross between Emmer and common Wheat it is a recessive character. Students of genetics will see in these results a parallel with such cases as those of white flower colour in *Primula sinensis* which character may show dominance owing to the presence of an inhibitor of colour or recessiveness, owing to the lack of a colour-producing character. The authors next bring forward evidence to show that linkage exists between "head" characters and resistance. Among 118 F_3 descendants of a cross between Emmer or Durum and Common (susceptible) Wheat, four bred true to the Emmer type of "head" character, and 33 to the Durum type, and of these the four Emmers and 8 of the 33 Durums were resistant; whereas 81 F_3 which had the characters of Common Wheat were all susceptible. It therefore follows that for there to be a good chance of producing common Wheats resistant to Black Rust large families must be raised. How large may be judged from the fact that in one experiment 128 common Wheat plants segregated, but of these two only were resistant and neither had the other characters necessary to make them of use agriculturally. This conclusion seems to us of the greatest practical importance in that it indicates that the plant breeder who undertakes to produce a race of Wheat of agricultural value resistant to Black Rust must be prepared to operate on a vast scale. If however, he does so work there would seem to be reasonable hope that, since the linkage between desirable resistant and undesirable Emmer or Durum qualities is not complete, here and there among the thousands or tens of thousands of descendants an occasional plant would be found combining in its precious person the good qualities of common Wheat with resistance to rust. Since the annual losses caused by Black Rust in America amount to many millions of pounds, this Mendelian search in spite of its inevitable tediousness, should be undertaken on a scale of sufficient magnitude to ensure a satisfactory result.

Nomenclature of Vegetables.—The Committee of the American Seed Trade Association and the Vegetable Growers' Association of America have drawn up a suggested code of nomenclature for vegetables, to which reference was made in *Gard. Chron.*, October 2, p. 165. The code aims at establishing a simple and exact system of vegetable variety nomenclature that shall be "appropriate, dignified and stable." The Committee suggests that brief names should be used, expressive of some character, quality, place or event associated with the source, time or place of origin of the variety. The name published for the variety shall be the accepted and recognised name, and names appearing in dated publications are to have precedence of those undated. Names of new varieties must not exceed three words and valid names of existing varieties shall not be changed in such a way as to lead to confusion or loss of identity. It is recommended that imported varieties shall retain their foreign name or its English equivalent. Improved strains are to be recognised by a descriptive phrase in brackets following the name, as Bonny Best Tomato (Hill Crest grown). It is recommended that a board of registration shall be formed whose duty it shall be to make and preserve records and descriptions of all existing valid varieties of vegetables and to register new varieties.

Seed Testing Station.—The Official Seed Testing Station for England and Wales, now temporarily housed at Streatham, will be incorporated with The National Institute of Agricultural Botany as soon as the Cambridge premises are available. A very considerable body of opinion, led by the Agricultural Seed Trade Association of the United Kingdom, is anxious to make this the sole official Seed Testing Station for the United Kingdom. This step is supported by the Ministry of Agriculture, the Development Commission and the Treasury, but up to the present the Scottish and Irish Departments have not seen their way to concur. Provision has, however, been made in the Seeds Act, for this desirable centralisation, if and when agreement on the subject can be achieved. The Station will be equipped to test all kinds of agricultural, garden and forest seeds, and the Council of the National Institute of Agricultural Botany will be ready to provide for any new tests which may be of value to the farmer or to the agricultural trade, if there is sufficient demand to justify the provision of the necessary staff and equipment.

Compulsory Hiring of Allotments.—For some time past certain Borough and Urban District Councils have been receiving demands for allotments, and have met applicants with the statement that they are unable to obtain the necessary land. Perhaps owners have been unwilling to let for the purposes of allotment work; perhaps they have said that theirs is land with a present or prospective building value. Faced with this statement some Councils have declared their inability to acquire land at a price or rent that will enable it to be used for allotments without loss. With this statement they have asked applicants to rest content. The Ministry of Agriculture, believing that the allotment movement is one of urgent national importance, is not satisfied with the existing conditions. The work done maintains and even increases the home-grown supply of food, it provides healthy and profitable occupation, engenders a spirit of co-operation and good will, and directs men's thoughts to the sanest and most restful side of life. In the circumstances the Ministry has felt compelled to issue a strong reminder to Councils that the position they have taken up may be based on a misconception of the Small Holdings and Allotments Acts, 1908 and 1919, under which they have ample powers to effect compulsory hiring for allotments in cases where suitable land cannot be acquired by voluntary means. Any Borough or Urban District Council which desires to do justice to applicants for allotments can hire land compulsorily for a term varying from 14 up to 35 years. If the owner of the land will not agree with the Council as to the amount of rent, an arbitrator may be called upon to decide the proper sum. The rent is based upon the sum at which the land has been let

* "Genetics of Rust Resistance in crosses of varieties of *Triticum vulgare* with varieties of *T. Durum* and *T. dicoccum*," by Messrs. H. K. Hayes, J. R. Parker, and Carl Kurtzweil, *Journal of Agricultural Research*, XIX, No. 11, Sept. 1, 1920.

previously, should there be any record of letting, upon the annual value at which it is assessed for income tax or rating, upon any loss that the owner may be held to suffer by severance, etc. If the owner of land compulsorily hired wishes to resume possession for building, mining or other industrial purposes, or the road-making necessary to enable him to carry on any of these operations, he can apply to the Ministry of Agriculture, and if he can satisfy the Ministry that his claim is sound, he may regain possession. At the same time it must be pointed out that any prospective industrial, mining or building values are not allowed to influence the arbitrator's rental valuation for immediate acquisition. So far as the expenses of compulsory acquisition are concerned, the Council can borrow the money to meet them, and a small increase in allotment rents is necessary in order that such expenses may be recouped during the period of the lease. The Ministry is of opinion that Councils should give serious consideration to this matter, and it urges them strongly to take immediate steps to hire land, by compulsion, if necessary, in order to satisfy the requirements of those who are seeking allotments.

The Influence of Stock on Scion.—A note* by Messrs. Gustave Riviere and Gabriel Bailhache supplies an interesting example of the influence of the stock on its scion. The case cited was that of the Pear William's Bon Chrétien. Of a number of examples, all grafted on the same stock (Coquassier) and growing together in a garden several were much more vigorous than the others. Inspections showed that the excess of vigour was due to the fact that these plants had been planted so deeply that the scions had emitted roots. A comparison of the fruits showed that the normal fruits were markedly larger, sweeter and of more characteristic acid flavour than those borne on the trees which had come to grow, in part at least, on their own roots.

A Garden Employee's Long Service.—Mr. Thomas Chilman, of Esher, who has just celebrated his golden wedding, has been employed at Sandown Park for the past 45 years. He assisted in the laying out of the park and, until quite recently, was able to work full time. He is still able to do three days' work weekly.

Inheritance in the Castor Oil Plant.—Genetical experiments carried out by Mr. S. C. Harland with the Castor Oil plant (*Ricinus communis*) confirm and extend the results which have already been obtained with this plant. The results relate to "bloom" specimens and stem colour. Bloom is shown to be an imperfectly dominant character. F_1 plants of a cross between varieties with and without bloom showing the character, albeit less perfectly, than do plants pure to the character. Similarly, spininess is a partially dominant character. The behaviour of stem colour is consistent with the hypothesis that two factors exist, one for mahogany colour, and one for green. When both are present the stem colour is rose, and when neither is present it is tinged. There appears to be repulsion between the factor for Mahogany colour and that for bloom.

Presentation to a Manager of a Seed Firm.—The many employees of Messrs. Hurst and Son, the well-known wholesale seedsmen, of Houndsditch, London, took advantage of the retirement of the manager, Mr. T. N. Cox, to show the esteem and affection in which he is held by presenting him with an inscribed silver salver. In making the presentation, Mr. J. S. Dixon stated that Mr. Cox joined the firm over 52 years ago, making, he felt, a record for service with one seed house.

Flax Growing and Flax Diseases.—It is well known that the acreage under Flax in Ireland is and has always been subject to remarkable fluctuations. These fluctuations are in part due to the chancey nature of the crop, and in part to economic and transport conditions. Thus, during the American war the area under Flax in Ireland was 300,000 acres (1864); in 1898,

34,000 acres; in the war years, 1915-18, it rose from 55,000 to 143,355 acres, only to fall immediately after the war to 55,610 acres (1919). One cause of discouragement to the Flax grower lies in the several risks of disease to which the plant is exposed. Investigations* by Messrs. Pethybridge and Lafferty show how numerous and serious are these diseases. Among these are "Seedling Blight" due to the fungus *Colletotrichum linicolum* which by decimating the seed bed may cause poor stands of the plant; Browning, also a disease of fungous origin, and like Seedling Blight transmitted with the seed, and Rust, and Firing, both of which are due to the rust fungus *Melampsora lini* (Tul.). In addition to these and other troubles Dodder is often present with the seed and works destruction on the plant which it attacks, and plants which escape all these evils may yet fall victims to the widely present and voracious Flax Beetle, a near ally of that only too familiar pest the Turnip Fly.

Some Provincial Flower Shows in 1921.—Newcastle flower show, under the auspices of the Botanical and Horticultural Society of Durham, Northumberland, and Newcastle will be held on August 30 and 31, and September 1, 1921. The cost of last year's show was £1,900, and takings at the gate amounted to £1,000, which left a net sum after paying amusement tax, of £836. The sum of £367 was received in subscriptions, compared with £185 in 1919, the membership being 470 and 117 respectively. The Society had also a large increase in donations, which totalled £608, compared with £268 in the previous year. As a result, the substantial sum of £166 6s. 11d. is carried to reserve. At the annual meeting held on the 9th inst. the Chairman (Mr. H. Mosley), and the Secretary tendered their resignation, but they were asked to reconsider their decisions. The Lord Mayor of Newcastle (Councillor T. W. Rowe) was elected President of the Society. Nottingham Chrysanthemum show will be held on a date as near to November 9, 1921, as can be arranged. It has been decided to hold the exhibition independently of other societies. The Society has a balance in hand of £140, and the chief difficulty seems to be in obtaining a suitable hall in the centre of the city for the exhibition. The Society had been allowed to lapse during the war, and technically there are at present no members. Lord Henry Bentinck, M.P., was elected President. Alderman C. J. Mee, Treasurer, and Mr. G. E. Skelhorn, Secretary. A committee was also appointed. Burton-on-Trent Chrysanthemum show will be held on November 12, 1921, and the schedule will include the usual classes for Japanese, incurved, decorative and single Chrysanthemums, and also for fruit and vegetables. The fruit classes will be amended to allow of small growers competing.

Royal Horticultural Society's Arrangements for 1921.—The dates fixed for the horticultural meetings and exhibitions at the Royal Horticultural Hall, Vincent Square, Westminster, in 1921, are as follow:—January 11 and 25; February 8 (annual general meeting), and 22; March 8 and 22; April 5 and 6 (Daffodil Show), 7 (Forced Rose Show), 26 and 27 (Auricula Show); May 10 and 11 (Tulip Show); June 7 and 8, 21 and 22; July 12 and 13 (Sweet Pea Show), 26 (Carnation Show), and 28 (Seedling Rose Show); August 9 and 23; September 6 (Dahlia and Gladioli Show), 20 (Vegetable and Dry Bulb Show), 22 (Autumn Rose Show), and 27; October 4 and 5 (Fruit Show), and 18; November 1, 2 (Chrysanthemum Show), 15, 29 and 30 (Perpetual-Carnation Show); December 13. The Chelsea Show will be held on May 24, 25 and 26, and the Holland House Show on July 5, 6 and 7.

Lothian's Book on "Alpine or Rock Plants."—Mr. C. Harman Payne writes:—Mr. Hay is quite justified in drawing attention to this little book (see p. 235) as a rarity. It does not appear in any bibliography that I can put my hand on for the moment. There is no entry of it in Pritzke, but a copy does appear to be in the library of the Massachusetts Horticultural

Society, Boston, U.S.A. In the very valuable Library Catalogue of that Society recently published, Lothian's book is entered thus:—"Lothian, James. Practical Hints on the Culture and General Management of Alpine or Rock Plants. 16° pp. 84, pl. 6 (4 col.). Edinburgh, n.d." Mr. Hay says the volume is 12 mo, and dated 1845, and the discrepancy gives rise to the query—are there two or more editions? The book was rather fully reviewed in *The Floricultural Cabinet* for November, 1846, pp. 278-281.

The Freezing of Apples.—Apples are often injured by frost, but they will take no harm from a certain amount of frost, their limit to cold resistance being about 28°. According to Messrs. Charles Brooks, J. S. Cooley, and D. F. Fisher*, frost injury bears a close resemblance to internal break-down. The affected tissues are more watery and the conducting vessels usually show prominently as dark brown strands extending through the flesh. Apples are greatly damaged by any bruises made whilst they are frozen. Frozen Apples may be thawed in a temperature of 32° F., or slightly above this, without them showing injury.

Corrigendum.—We regret that, by an error in translation, the subject of the article on p. 223, in our issue of November 6, 1920, was given as the origin of the cultivated Pear, whereas it should have been the cultivated Apple. The Cider-Apple is throughout intended to be described, not the Pear.

"Gardeners' Chronicle" Seventy-five years Ago.—*Autumn Planting Potatoes.*—I live in a neighbourhood (Cheddar and Axbridge) where there are mere early Potatoes grown than in any other parish in England, and at this season, when all persons are complaining of the disease, I have done my utmost with the Potato croppers to prevail on them to plant during the autumn, but without success. The man who I was desirous in particular should adopt this plan more than any other was a Mr. George Spencer, of Cheddar, whose industry in bringing forward early vegetables for the Bristol and Bath markets I had often admired, and whom I had talked to on the subject of the new method of cultivation. I did my best to get him to plant in the autumn, but my efforts were fruitless. "Why should I take the trouble," said he, "when I can grow three crops of Potatoes in the same ground in the year, if I begin in February?" That he could do so, or had done so, I doubted, but he assured me that he was ready to verify on oath that in February, 1840, he planted some early Ash-leaved Kidneys, with good rotten manure, and on May 15 he dug a good crop. Without manuring he planted the same sort and dug again in August, immediately after which he planted and dug the third crop on October 25. The second and third crops he states (if possible) were better than the first; but at each digging they averaged 1s. 9d. per peck, so that there was only one manuring for the three crops. "Now," said George Spencer (and he is a man who is respected and can be believed), "can any of the gentlemen professors beat this?" Mr. Spencer is a neighbour of mine, and I know him to be a man of the strictest integrity, and who would shudder at a falsehood, so that I can safely say that what I have written is correct. Our land is of the best quality. Mr. Spencer assures me that he regularly grows his two crops of Potatoes, after which he sows Vetches, and digs them in in December, to manure the land for the next crop of Potatoes, and I have sufficient proof that they are of the very best quality, which I account for from being grown continually in the same ground. *A Subscriber, Gard. Chron., December 20, 1845.*

Publications Received.—*Pro Helvetia*, Swiss National Review for Travel and Sport, by Curt Wuest, Special English Edition, Winter Season, 1920-1921. Swiss Exporter Ltd., Zurich I. Price 2 frs. *A Book of Dovecotes*, by A. O. Cooke, T. N. Paulis, London. Price 6s. net.

* *Journal de la Société Nationale d'Horticulture de France*, fourth series, XXI, October 20, 1920.

* "Investigations in Flax Diseases," *Journal of the Department of Agriculture for Ireland*, Vol. XX, Part 3.

* *Farmers' Bulletin*, 1169, United States Department of Agriculture.

THE ROSARY.

THE SELECTION OF NEW ROSES.

Is it possible to obtain a valuation on scientific lines of the varieties of Roses for garden purposes? This appears to be the problem that our American friends, who are interested in the Rose, have set themselves, and a large part of Capt. Thomas's book* is compiled with the object of solving this problem.

The enormous number of new Roses now sent out every year by British, American and Continental raisers (the issue of which was scarcely checked even by the recent war) has led to a demand from the public, on both sides of the Atlantic, for some authoritative direction as to which of them are worth growing in their gardens. The great interest taken in new Roses is very evident at every show where classes are provided for seedling varieties and sports, and there can be little doubt but that the improvement which raisers of new varieties have made has been considerable.

This has specially occurred in the production of better colouring, more refined form and greater freedom and continuity in blooming. Usually four or five years elapse after the introduction of a new Rose before it can be sufficiently widely distributed and grown by the public to enable any reliable judgment to be passed on its garden value—while climbing varieties take longer to establish than dwarfs, and in their case even a more extended period may be required. Notwithstanding this fact, it will be found that in any list of the 50 or 40 best Roses for garden cultivation only some half-dozen will be of more than 20 years' standing.

Whether our gardens be large or small, and whether we can obtain much or little labour to keep them in order, most of us find the space at our disposal strictly limited, and we would fain have it filled with the best Roses that we can obtain.

Yet, so large is the yearly output of the newcomers that even the most enthusiastic rosarians know they can find places for only a comparatively few untried sorts, while the more experienced are well aware that of their new purchases a very high percentage must fail to come up to the standard of excellence required in a new Rose to constitute a real improvement on older varieties. Hence the public demand for adequate discrimination before they shall replace old favourites by Roses of which they have little personal knowledge.

The demand is no new one, and to meet it in some measure the National Rose Society published in 1902 its *Official Catalogue of Roses*. This is revised by the society and re-issued to its members every two or three years, the later issues being renamed as the Society's *Select List of Roses*. At each revision numbers of names have been cut out and such of the new kinds as are thought to be of sufficient merit take their places. These revisions have from time to time been entrusted to a small committee, and though this committee resorted to various devices for obtaining assistance from the experience of others, their determinations were necessarily matters of opinion.

In order to assist them the late Mr. Edward Mawley, whose mind was eminently scientific in its outlook, had for many years before his death collected and tabulated lists of all varieties of Roses contained in the winning stands or boxes of exhibitors at the National Society's shows, the decorative and exhibition varieties being separately dealt with.

These lists, while they did not determine the garden value of the varieties appearing in them, were at least valuable evidence of the Roses for the time being most popular for exhibition purposes.

In order to supplement these lists, Mr. Mawley was also in the habit of circulating among his many friends, at the end of every Rose season, a number of enquiries as to the behaviour of both old and new Roses in his friends' gardens

during the past season, and afterwards of tabulating the resulting replies, which he published with his own comment in the *Rose Annual* of the following year.

It is believed that similar enquiries have been continued by the present secretary of the N.R.S., Mr. Courtney Page, but that the registration of prize-winning varieties has not been continued, at least to any great extent, since Mr. Mawley's death.

It will be seen that these circulating enquiries effected, on a small scale, a sort of plebiscite as to the value of different varieties, and the result gave a very fair indication of the most popular Roses. The general accuracy of the results thus obtained has recently been illustrated in an interesting manner in Australia, where a selection of the best Roses for general cultivation on somewhat similar lines has taken place. Save for the inclusion of one or two locally-raised varieties which are not generally known here, the Australian list corresponds closely with that published by our National Rose Society.

American growers are experiencing the same difficulty that meets Rose growers in this country. Capt. G. C. Thomas writes: "It is a lottery for the average Rose grower to order new varieties; the greater part will prove utter disappointments, a waste of money, space, time and care and the catalogued description must be more than discounted."

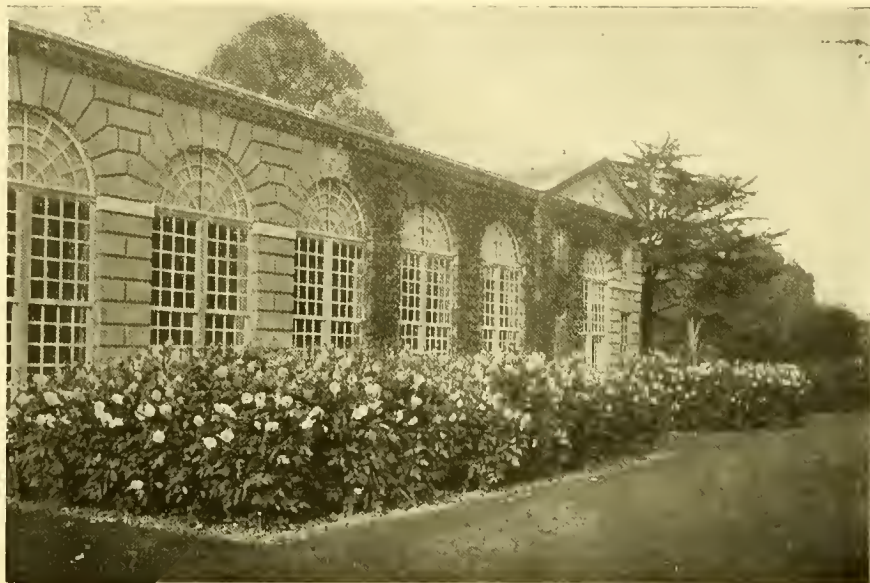


FIG. 137.—DAHLIA DELICE AS USED FOR MASSING IN FRONT OF THE WOOD MUSEUM, KEW (SEE P. 299)

Accordingly, American Rose growers have attacked the problem of discrimination with the practical energy which distinguishes their countrymen. They have established "Rose Test Gardens" in various places, including one at Arlington, Va., and another at Portland, Oregon—where Roses are grown under varying conditions of cultivation, attention and treatment and the results recorded have appeared in the *American Rose Annual* for the past three years. In addition to these more or less public gardens they have several amateurs in different parts of the country making observations on their own plants, according to definite plans, and publishing their results.

Capt. Thomas is one of these, and about one-half of his book is taken up with an examination of the best Roses, which is virtually a record of his own tests. He began his work before the war, but it was interrupted by his service. Now, happily, he has returned and taken up his work with renewed ardour.

He arranges his Roses into three groups. The first contains his 46 best Roses. Each of these is generally described, and then separately examined with regard to variety, colour, fragrance, its lasting powers in respect of colour, fragrance and form respectively; its shape, sub-

stance, petalage, size, blooming, under which heading is given the number of flowers per plant produced in each of the five months, June to October inclusive; its hardiness, foliage, growth, length of stem and height of plant; to these are added pruning directions, a general note on the merits or demerits of the Rose, and the stock on which it best succeeds. Altogether, each Rose is discussed in 17 different aspects.

The second and third groups comprise his "main list," which runs to some 200 varieties. In the main list the results are given in tabular form and the headings slightly reduced, but they include the flowering record for each month.

The flowering record forms an important feature of American observation. Down to the present, observations have been made by only a few observers and on a few plants only of each variety. It all requires continuous and close attention, but such records are being kept in many parts of the States. It should prove of very considerable value in connection with other observations, but should be checked by enterprising rosarians in this country, for the conditions are not the same—thus, while Frau Karl Druschki flowers fairly well here in autumn, we read that in America it "gave an average of 58 blooms" per plant, "in 1916 and the blooming season was over in July. In very damp seasons Druschki will give scattering blooms in the early fall."

Capt. Thomas and his fellow-countrymen are to be congratulated on the efficient attempt they are making to solve their Rose problems, and that they are doing much in the service of the Queen of Flowers is unquestionable. Whether the problems are completely soluble is another matter. If it were reduced to scientific rule, Rose growing might cease to be interesting. But there is no danger of this at present. *White Rose.*

ORCHID NOTES AND GLEANINGS.

ODONTIOPA CORNELEST.

PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower, Mr. Farnes), sends a spike of this very richly coloured cross between *Odontoglossum Dora* and *Odontopha Lambauiana*. The flowers, which are large and broadly proportioned, have the sepals and petals entirely dark purplish-red, the broad labellum being rosy mauve with yellow crest. It is of very complicated ancestry, but the result is all that could be desired. We first recorded the cross under the above name for C. J. Phillips, Esq., Sevenoaks.

* *The Practical Book of Outdoor Rose Growing*, by George C. Thomas, jun., pp. 224, with coloured and half-tone plates. Lippincott Philadelphia and London, Garden edition, 12s. 6d.; edition-de-luxe, with more coloured plates, 30s.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pineapples.—The beds in which Pines intended for starting in January have been quietly resting should be carefully examined, first to ascertain if the plunging material is absorbing the little moisture contained in the pots, and second, to correct this evil if found necessary. Although nearly another month has to elapse before starting the plants, it is better to be on the safe side by moistening the tan or leaves around the pots than to give water to the roots, until such time as the application can be repeated. The temperature of the pit having been lowered to the minimum of 56° to 60° on cold nights, and 65° to 68° by day, the amount of atmospheric moisture will be very small; much, however, will depend upon the nature of the weather. Much may be done to keep the temperature steady, and the atmosphere soft and genial by the use of protective coverings at night.

Succession Pine Houses.—The plants in the pit containing suckers, especially those in small pots, possibly within a few inches of the pipes furnishing bottom-heat, should be examined at short intervals. The temperature of the pit may be 50° to 55° by night and about 60° by day for the remainder of the current year.

Successional Fig Houses.—Trained trees established in borders should be cleansed and made ready for forcing, but before this is done the whole mass of compost should receive repeated applications of water warmed to 85°. Late houses in which the trees are allowed to start naturally should be kept dry and as cool as possible by liberal ventilation, unless the weather is exceptionally cold and frosty.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

The Cool House.—The various species and hybrids of *Odontoglossums* are in different stages of growth, and many are sending up their flower-spikes. The plants need all the light available, and the glass should be washed both inside and out whenever it becomes dirty. Plants making their growth and rooting freely should be given copious supplies of water, but this must not be overdone. If the weather is mild, less fire-heat will be needed, and the compost will, in consequence, remain moist for a much longer period. *Odontoglossums* should never be allowed to become excessively dry at the roots, and the least moisture is required after the flower scape has been removed, and until the new growth begins to form roots. At other times the soil should be kept fairly moist. Due regard should be paid to ventilation and temperatures, and, although it is not possible to ventilate so freely as hitherto, sufficient air should be admitted to keep the atmosphere suitable for the plants. This is somewhat difficult to define, but the experienced grower can tell directly he enters the house. The temperature of the latter should be kept as even as possible, and an endeavour made to reach the maximum warmth about mid-day, and the minimum in the early morning. When damping is necessary it should be done when the temperature begins to rise, and not when it is falling. Other occupants of the cool house, such as *Masdevallia* and *Pleurothallis*, require less water now, but the former, having no pseudo-bulbs, must not be kept too dry. At this season of the year small snails and slugs are often very troublesome in the cool house, and they should be diligently sought for and destroyed. They may be trapped with Lettuce leaves, saucers of bran, or hollowed out portions of Potato tubers, but the most effectual method is to search for them nightly with a strong lamp. Special varieties may be placed on raised stands or stood over saucers of water.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Datura (Brugmansia).—Pot-grown specimens of this plant should be kept dry during the winter in a dry, frost-proof building. Before storing them the shoots may be partially shortened, and when starting them in spring they should be pruned hard. They are strong, gross growing plants, and the fact that they withstand hard pruning without taking any harm makes it possible to keep them within reasonable bounds. Where there is room for them they make fine subjects for planting out in large conservatories. They are all easily propagated by means of cuttings. Pot-grown specimens are best grown as standards, as their large, pendulous flowers are shown to better advantage on tall stems. *D. sanguinea*, *D. suaveolens* and *D. Knightii*, with double white flowers, are generally cultivated in gardens.

Lapageria.—Now that the growths of this plant are hard and matured, they may be unfastened, thinned, and cleansed thoroughly. The shoots are very brittle, and require careful handling. The chief enemies of the plant are mealy bug, scale, and thrip. Mealy bug may be kept down by a vigorous use of the syringe; plants attacked by scale should be sponged at this time, and the pest may afterwards be kept in check by an occasional spraying with paraffin emulsion. After cleansing the plants and rettying the shoots, the surface soil in tubs, beds, or borders should be removed, and a top-dressing of fresh compost given. This should consist of rough, fibrous peat and good medium loam, with sufficient coarse sand to render the compost porous. If it is necessary to re-tob the plants, or entirely renew the soil in the bed or borders, this should be done before the plants are trained into position. When planted out the roots should be restricted within a small space; if this is not done they will wander too far, and in consequence many strong suckers may come up where they are not expected, and others get destroyed. Slugs are very fond of the young shoots, and should be guarded against.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Grey Foliaged Plants.—The intrinsic value of plants having greyish foliage, whether deciduous or evergreen, perennial or annual, is fully recognised in flower gardening. Especially is this true in regard to schemes in which shades of pink or blue predominate. In association with silver-grey foliage, flowers of decided hue are enhanced; thus, varieties of *Clematis*, including *C. flammula*, are seen to advantage when foaming over a grey-leaved shrub, and this fact should not be overlooked when planting. In winter, white, or greyish-stemmed species relieve the usual greenery in a striking manner. For this purpose a group of *Rubus biflorus* is pleasing in the wild garden, whilst the giant plumes of *Glycerium* (Pampas Grass), carried on greyish stems, are useful in various positions. Varieties of *Rubus* may be planted now, but defer the planting of the *Glycerium* until the spring.

Formal Aspects.—The treatment of comparatively small spaces enclosed in geometrical lines requires care. In such cases, bold, simple combinations are preferable to a collection of many plant species, and one genus, for instance, the *Iris*, may be planted in formal places without forming beds of precise design. The latter remark applies equally to herbaceous *Paeonies*. A simple drift of mauve *Iris*—of the pallida section—and a breadth of pink *Paeonies*, planted in adjacent beds, make a pleasing combination when in flower, and, later in the season, the *Iris* leaves accentuate the beautiful colouring of the *Paeony* foliage. If prominence is given to a central position the universal sundial might give place to an effective bed of *Dianthus*; a variety of *D. Allwoodii* would be eminently suitable. Generally speaking a central grass plot is preferable to structural ornamentation.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Soil for Seed Raising.—Soil will be required in a fortnight's time for numbers of seed pans and boxes, and it should be prepared in advance. What is required is a mellow, sweet-smelling compost of a proper degree of dampness for efficient working. A rich soil is not desirable, as seedlings produce a greater quantity of roots in a poor compost, with the result that, when transplanted, they are less liable to receive a severe check. The compost I employ for seed-raising is made of good loam, one part, old potting soil three parts, leaf soil one part, burnt refuse one part, with sufficient sand to render it porous.

General Remarks.—Inclement weather will provide an opportunity to examine roots in store for signs of decay, and any that are affected should be removed before the rot spreads to others. New growth should be removed. Replace the covering ashes or sand about the roots, and see the protection is sufficient to keep the frost from them. Onions, also, should be looked over, and any whose keeping qualities are doubtful put aside for immediate use. Trees having shed their foliage, a general tidying of the kitchen garden should be undertaken, and its maintenance throughout the winter will afterwards prove easy. Make it a rule that the daily supply of vegetables is collected and taken to a shed where the produce may be cleaned and made in a condition fit to take to the kitchen, and not, as is sometimes the case, trimmed on the garden and the tops and roots left to litter the ground. All growing crops should be cleansed thoroughly in a systematic manner, removing decaying leaves, weeds, and rubbish, finally raking the ground clean between them. Endeavour to get most of the work necessitating wheeling finished, then undertake any repairs or renovations to the paths and edgings.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Canker.—Certain varieties of Apples are inclined to canker on cold, heavy soils, and if the disease is not checked it results in the loss of whole branches, and the trees become unsightly. The soil is not always the sole reason for the trouble; it is sometimes caused by injury to the bark. Perhaps one of the best methods of treating canker is to thoroughly trim the wound with a sharp knife, and then dress the affected part with a mixture of tar and clay. The clay should be made into a thick paste, and the tar added in equal parts. Work the specific well into the wound with a brush.

Birds and Fruit Trees.—In snowy weather birds are most troublesome in picking out the buds of fruit trees. Gooseberries and Currants may be protected by splashing the shoots with hot lime and Quassia extract and also by inter-twining black cotton among the top branches. Plums on walls may be protected by nets.

The Apricot.—The Apricot fruits on shoots of the previous year's growth and spurs on the older branches. In pruning retain as much of the young wood as may be necessary to fill the allotted space, but avoid overcrowding the young shoots. Cut away all dead and decaying spurs, which are often too plentiful on these trees. As each tree is pruned the branches should be fixed in position as regularly as possible. Apricots are generally trained in fan-shape, which is the best form to adopt, as the spaces left by dead branches may be easily filled. If the soil has become hard on the surface and sour, some from above the roots should be removed and sweet compost added with which chalk and bone meal have been mixed, finally applying a top-dressing of short, decomposed manure.

The Morello Cherry.—These fruits require much the same treatment as that advised for the Apricot with regard to pruning and laying-in of the young growths. The borders should be kept in good condition, and amply supplied with lime.

FLORISTS' FLOWERS.

DAHLIAS FOR MASSING IN PUBLIC PARKS AND GARDENS.

GREAT attention has been paid during the past few years to the production of Dahlias that give the greatest display in the garden. Just before the war there was a revival in the use of the Dahlia as a decorative plant for garden purposes. Some years before that time, the popular interest in these beautiful flowers had suffered a decline owing, according to the opinion of many, to raisers devoting their efforts chiefly to the production of show varieties, irrespective of their merits as garden plants. There was a wealth of very beautiful varieties possessing very good qualities, including good form, large size, and pleasing colouring, especially among the Cactus-flowered section, but when they were grown in gardens the floral display was disappointing, for many of the blooms either possessed such short stalks that they were in many cases hidden by the mass of foliage, or hung their heads downwards from the view. However, the advent of the Paeony-flowered, Colerette and Star types soon created a new interest in the Dahlia, and raisers also produced many fine Cactus varieties with long stems that make a splendid effect in the garden in autumn.

The season of the Dahlia is when the majority of garden flowers are either finished or on the wane, and they are admirable to fill the gap between the border flowers and the Chrysanthemums, the plants continuing in bloom in favourable seasons to the end of October.

Each season sees a number of fine new varieties, and many obtain the Award of Merit of the Royal Horticultural Society and the First-Class Certificate of the National Dahlia Society, for the awards are made by a joint Floral Committee of the two Societies. The best novelties submitted during 1920 will be tried in the R.H.S. Gardens, Wisley, next season.

The Dahlia is one of the best plants for massing to give a striking effect, and because of this it is very suitable for planting in large gardens, including public parks and open spaces. For several years beds of Dahlias producing bold effects have been grown at Kew, and the illustration reproduced in Fig 137 shows some of these large beds and the great wealth of blossom they provide. Another illustration, Fig. 138, shows Dahlias growing in the Phoenix Park, Dublin, where their association is less formal than at Kew. During the season, Dahlias may also be seen in bloom in many of the London parks, especially those of Bermondsey and Battersea; in the Victoria Gardens, Brighton; the public parks at Prittlewell and Chalkwell Hall, Southend—to mention only a few. These flowers are also extensively grown in America and Canada, and during my visit to the latter country in 1905 I saw some remarkably fine groups in the public gardens at Victoria, British Columbia.

Dahlias for this method of planting need to be selected for the special purpose, or the results may be disappointing. Most of the sections are suitable, and a few notes on some of the best varieties may be of use to those who have charge of such places.

The Cactus type is very beautiful, but unfortunately many varieties have pendant flowers, consequently their beauty is lost to the view. When the blooms are borne erect on long, stiff stems well above the foliage, the effect is fine until the plants are cut down by frost. A few in this class that may be recommended as being conspicuously good are Mrs. C. Foster (pink), Mrs. Paton (crimson-scarlet), Mary Purrier (crimson-scarlet), White Ensign, Mrs. Landale (yellow, edged rose), Edith Carter (yellow, edged carmine). The bed of Dahlias illustrated in Fig. 138 is of the variety White Star, and none surpasses this type for garden decoration and for continuous blooming. The old flowers should be cut off regularly, as the pods must not be allowed to seed, for this would exhaust the plants to the detriment of their continuous flowering. This class of Dahlia is of a totally different type to the

older ones and the growth and habit generally are light and graceful, whilst the blooms are borne on long, stiff stems and show to great advantage in gardens. Other choice Star varieties are Crawley Star (pink), Primrose Star, Rising Star (scarlet, tipped gold), Autumn Star, Yellow Star, Eastern Star (rosy mauve), and Coral Star (coral pink).

Paeony-flowered varieties are many of them tall, strong garden plants, that show to advantage at a distance, and these are valuable for massing in extra large beds. A few of the best sorts are Aphrodite (white), Luna (yellow), Maggie (salmon rose), Martial (scarlet), Salome (orange), Mrs. Marné (rose), and Hon. Mrs. Phillip Roberts (salmon).

Colerettes include many charming varieties, and these, together with Singles and Pompons, may be used in smaller beds. Good Singles are found in Cardinal (cardinal red), Leon (vivid scarlet), Kitty (pink), Owen Thomas (scarlet, tipped yellow) Winona (deep maroon), Marie (coppery orange), whilst of the Colerettes, Bonfire (scarlet), Colleen (white suffused rose), Scarlet Queen, Ustane (salmon-scarlet), Doreen (rose), and Admiral (maroon), are good.

There is another very decorative type of Dahlia not very well known, to which the name of Mignon has been applied. The plants are exceedingly dwarf—many of them growing not more than a foot high—and they are charming as an edging to taller varieties or for furnishing panelled beds. Where a series of

THE ALPINE GARDEN.

PRIMULA BEESIANA.

MESSRS. BEES, LTD., through their collectors in China, have introduced a number of useful garden plants, one of the best being *Primula Beesiana*, that was raised from seeds sent home by Mr. George Forrest in 1908. Professor Bayley-Balfour in dealing with the Candelabra section of Primulas, to which *P. Beesiana* belongs, in his paper read at the Primula Conference in 1913, stated that "they are the plants of everybody—free growers and free flowerers if adequate root-moisture is present." Of the four purple-flowered species of this section then introduced, Professor Balfour stated of *P. Beesiana*, "It is perhaps the freest grower of the four." Some may question this when *P. pulverulenta* is included but, in my opinion the Professor is justified in his statement, as with him *P. Beesiana* has proved a better grower than *P. pulverulenta*.

P. Beesiana is an exceedingly ornamental plant. Like the others of the section it has clusters of Primrose-like leaves and bold stems, two or three feet high in some places, and carrying whorls of brilliant purple flowers, varying slightly in shade, with a yellow eye.

Mr. Forrest, in a note on this plant in *Gard. Chron.*, September 30, 1911, states that it forms huge colonies in its native habitat, often covering many acres, but so far it has only been seen in one district. The situations favoured are



FIG. 138.—DAHLIA WHITE STAR AS USED FOR MASSING IN PHOENIX PARK, DUBLIN.

small beds exist on terraces these Mignon Dahlias may be employed to great advantage, as the beds may be furnished entirely with different varieties of one colour. The one great advantage of this type of Dahlia is that stakes are not required to support the stems. Varieties of the Mignon type include Kathleen (apricot), Mincio (scarlet), Albion (white), Janet (orange), Daffodil (yellow), and Roy (crimson).

The Decorative section has also been greatly improved in recent years, and many fine garden varieties are in cultivation. These make a wonderful display. Three varieties that may be especially recommended are Crimson Flag, Reginald Cory and Brentwood Yellow.

All these types of decorative Dahlias may be put to many useful purposes, such as for furnishing bare spaces in shrubbery borders, in association with clumps of shrubs or in front of bold promontories planted with shrubby subjects. They furnish a touch of colour to the plantation at a time when such places are becoming somewhat sombre and before the foliage of the shrubs has taken on its autumnal dress. The Dahlia may also find expression in the wild garden, and here it may be used as isolated plants or in scattered groups, working them into the general design without any approach to formality. *J. Cheal.*

moist, gravelly meadows along the margins of small mountain streams.

As indicated by Mr. Forrest's remarks, *P. Beesiana* is a moisture-lover, and does not object, as some plants do, to having its roots wet in winter, but is happy with plenty of moisture about them at all seasons. Some recommend growing it in shade, but I have it planted in full sun by the side of a Water-Lily pool, where it is kept constantly moist. It may be raised from seeds or increased by division. *A.*

LINUM ARBOREUM.

THE literal translation of the name of this plant would suggest that it is tree-like in its habit. It is true that it is evergreen and rather shrubby in its growth, but its stature is by no means "tree-like," seeing that it rarely exceeds a foot in height and is often a little less. It is, however, a good rock garden or border plant. Less graceful in its way than such species as *Linum perenne*, it is one of several yellow-flowered species, which are appreciated in most gardens. It is fairly hardy in well drained soil of a moderately light nature, and may be propagated by seeds, division, or cuttings, the first-named method being the easiest. From seeds sown in spring under glass or in the open in May or June, seedlings will bloom the following summer. *S. Arnott.*

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ADVERTISEMENTS should be sent to the **PUBLISHER, 41, Wellington Street, Covent Garden, W.C.2.**

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers or of any matters which it is desirable to bring under the notice of horticulturists.

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Letters for Publication. as well as specimens of plants for naming, should be addressed to the **EDITORS, 41, Wellington Street, Covent Garden, London.** Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Our Almanac.—We shall publish in an early issue of the *New Year "Gardeners' Chronicle" Almanac for the year 1921.* In order to make it as useful as possible as a reference, we shall be obliged if secretaries of Horticultural, Botanical and Allied Societies, or any of our correspondents, will send us **IMMEDIATE INFORMATION** of all fixtures for the coming year.

THE MARKET FRUIT GARDEN.

VERY seldom is the weather of November so dry and pleasant as it was this year in East Sussex. I registered only 1.81 inch of rain in ten days, which is considerably below the average; and as most of this fell during the last five days of the month, there were three weeks in which work in the open could proceed almost without interruption. The land was at times as dry on the surface as one expects to find it in March. Conditions were thus ideal for the planting of fruit trees, though a correspondent in the Eastern Counties wrote that he was obliged to stop planting owing to the land being too dry.

DRAINAGE OF FRUIT PLANTATIONS.

The least satisfactory item in the planting of fresh land is drainage. This is a very important matter where the subsoil is wet in winter, for fruit trees never remain healthy in such conditions; but there is always the feeling that every drain put in may be a source of trouble in future. Even where the drains are 2 ft. 6 in. to 3 ft. deep they often become blocked with roots; and a blocked drain is worse than none at all. Black Currant bushes are particularly troublesome, their roots forming a solid core in drain pipes which is quite difficult to remove. No doubt their love of moisture induces them to go to a great depth and penetrate the drains. Every winter there is a good deal of work to be done in putting drains right. This would not matter if it could be done without disturbing trees and bushes.

In planting this winter I left the draining until after the rows had been marked out by means of the stakes that are to support the trees, so that the drains could be laid midway between the rows. In this way I shall avoid serious disturbance of the trees when the drains need attention. It is impossible to miss the rows of the undercrop, Black Currant bushes, but these are of less consequence than the permanent trees.

A neighbour who is planting several acres this winter is relying entirely on surface drainage. He has had the land ploughed in narrow "stretches" or "lands," the width of which

is the distance required between the rows. The ploughing has been done in such a way as to crown these "lands" up as much as possible. The trees are, of course, planted on the crown, so that they will get the benefit of the increased depth of good soil, whilst surface water will drain down into the open furrows between the "lands." Whether this plan will entirely obviate the need of under drainage remains to be seen, but apart from that it should give good results, as the top soil is none too deep on the level. No doubt repeated cultivation and hoeing between the trees will level the land in time, but it can always be ridged up again by ploughing towards the trees.

I know that surface drainage is an excellent thing, as I always have water-furrows ploughed between the rows in autumn where the slope of the land is suitable, and it undoubtedly keeps the soil drier during the winter and makes it work better in spring.

ORCHARD SANITATION.

There is a good deal to be done this winter in what is now known as orchard sanitation, or the removal and burning of all dead and diseased wood. This is conveniently done in the course of winter pruning, and is undoubtedly a great help towards the suppression of orchard diseases. Unless this is done winter spraying and other applications of fungicides are much less effective, as it is obvious that no wash can touch a fungus which passes its winter or resting stage within the tissues of dead shoots, spurs, etc.

The Silver Leaf Order has made compulsory the removal of dead wood from Plum trees, and a good thing too, for, even if this fails in its object of stamping out Silver Leaf, it will help greatly to keep down Brown Rot, which is almost, if not quite, as serious a disease. The past season was a bad one for Brown Rot, and there are many dead shoots, spurs, leaves, dried-up fruits, and even whole branches which ought to be cut off and burned. The work takes time but is worth while, as it removes a certain source of re-infection of the trees in the following spring, when the fungus would normally again become active and distribute spores.

On Apple trees there are diseased shoots of two kinds which are particularly plentiful this year. I refer to those which carry the winter stage of Apple Scab and Powdery Mildew. The scabby shoots, which are recognised by groups of little eruptions on the bark, may be found on several varieties which are liable to this disease, but most easily on Cox's Orange Pippin. It is tiresome to have to remove them, as it often means the hard pruning of leaders which would otherwise be left alone or merely tipped, but it is useless as well as dangerous to leave them, as most of them ultimately die back.

The other disease, Powdery Mildew, has been thought little of, but it threatens to become more serious. There was more of it during the past summer than I have seen hitherto. Everyone knows the summer stage, when the leaves are powdered white by the fungus. The shoots are easily recognised in winter by their whitish look and drooped, somewhat shrivelled appearance.

If all dead and diseased wood is destroyed, canker patches pared away and dressed with tar, and the trees afterwards sprayed with lime-sulphur or some other fungicide and cleanser, everything possible will be done to start the next season with healthy plantations.

MANURING.

Recent investigations leave little doubt but that regular bearing in fruit trees is chiefly a matter of nourishment, fruit bud formation depending on plant foods taken up by the roots, fabricated by the leaves, and stored in the buds and other parts of the tree. This makes me wonder whether it would pay market growers to use more manure than most of them do at present. I think it would be found, if the information were available, that the best growers, who would naturally be the most lavish users of manures, have the most fruit in a lean year like the present. In a year of plenty such as 1919, even the most neglected of farm orchards had a crop; but this year most of them were almost entirely barren whilst the plantations of the best growers, I think, were more fortunate. If the more generous use of manure results in more regular bearing, it would certainly pay, for half a crop in a year like 1920 is worth more than a full crop in a bountiful season.

There is a lack of definite information as to the amount of manure required by fruit trees. Whilst they are young the matter is fairly simple, because the length and strength of the annual growth gives an indication of the trees' requirements. So long as we can manure so as to keep them making 10 to 15 inches of young growth annually we are not far wrong. If we force a stronger growth than this we are not likely to get so much fruit, as the tree uses in the manufacture of growth food materials which should go to the formation of fruit buds. If we get less growth we are probably running a risk of under nourishment, and the trees are likely to be less regular in bearing. But trees cannot continue to make so much growth for ever; and it is the old tree that is the problem. In time it does not extend more than an inch or so annually, the prolific varieties often become a mass of fruit spurs, and apparently make no further development at all. There is then nothing to serve as a guide as to the amount of manure required. Probably an annual dressing would not be too much in such cases, as it may be assumed that the roots have practically exhausted all the natural plant food in the soil within their reach.

WHEN TO APPLY MANURES.

Since the fruit buds on orchard trees form nearly a year before they burst into bloom, it seems obvious that manures should be applied some time during the growing season if they are to assist the trees to form buds for the next year's crop. In private gardens it is a common practice to apply a mulch of stable manure during the summer, or feed the trees with liquid manure or artificials, the object being to improve the hanging crop; and it is quite likely that this helps the trees also to form fruit buds. Most market growers, on the other hand, apply all their manures during the winter, because it is then only that they can spare time for the carting and distribution. It is probably for this reason that they have found lasting, slow-acting, organic manures to give the best results. These yield up their plant foods steadily, so that the trees can draw upon them at any time during the growing season, provided that the soil is moist enough for the roots to absorb them. So long as the soil does not lack this slowly-decomposing material, the trees are probably rendered to a great extent independent of summer dressings and artificials, whilst good surface cultivation is not a bad substitute for a mulch of manure so far as the conservation of moisture is concerned. *Market Grower.*

POT PLANTS FOR CHRISTMAS TIME.

VERY few people other than those who do business in Covent Garden have any true notion of the extent of the pot plant trade. Of the enormous quantities of plants grown for summer bedding the public has a fairly good idea, because such plants, in full bloom, are effective and appear in nurserymen's and florists' shops during May and early June, at a time when warm weather is calling everyone out of doors and drawing attention to the beauty of leaf and blossom. But the trade in pot plants continues all the year round, and as a flowering plant is one of the brightest and daintiest of Christmas gifts it follows that large numbers are grown for the Christmas trade. It is quite probable, however, that co-operative advertisement would enormously increase this branch of business, because the frequent question is: "What shall I give So and so for a Christmas present?" The friend or relative in question may not expect or desire a costly present, and consequently would greatly appreciate the gift

tons of Grapes annually, and at this season of the year send quantities to the North of England in handy, cross-handled chip baskets, each containing 2½ lb. to 3½ lb. of fruit—a neat parcel for a Christmas present. The only Grapes grown are Black Hamburgh, Alicante and Gros Colmar. Tomatoes are also cultivated in quantity during the summer and autumn, at a time when many of the pot plants are out of doors.

It is, however, to the pot plants that the writer desires to draw special attention. Even the big Camellias planted out—one of which fills a house, and is probably the biggest Camellia tree in this country—fail to interest a visitor so much as the Heaths. Several long houses filled with Marguerites in full bloom in mid-December, and other houses filled with Solanums, Boronias, Cinerarias, Acacias, Rhododendrons, Crassulas (fine plants, each grown in just over a year from a single cutting), all contribute to the interest of a visit and show the perfection of skill in cultivation, but fail to stir enthusiasm as do the wonderful Heaths for which this firm has a reputation which extends beyond the confines of the United Kingdom, and even of Europe.

None grow Heaths better than the Messrs. Sweet; few, if any, grow them so well. The sorts

Scarcely any operation in horticulture is more tedious than the insertion of cuttings of Heaths. The cuttings are so tiny that only the deftest fingers are able to insert them with precision as to spacing and depth; therefore it is not surprising to find that nearly all this branch of the work is accomplished by girls, many of whom are also experts in the art of potting Heaths.

The earliest of the Genistas are already studded with their little spikes of golden flowers, but the greater part of the many thousands of plants will bloom later, including the new, double-flowered form, of which the Messrs. Sweet hold considerable stocks. Cinerarias fill many houses, and some are in full bloom; all are robustly healthy and clean, as are the 60,000 Marguerites in various sizes. A gardener in a modest private establishment would find it rather difficult to visualise the army of Marguerites (in 48-sized pots) contained in the three houses, each 265 feet long and 40 feet wide, with not a single leaf disfigured by the leaf-miner. Several houses are filled with sturdy Stocks, some to flower ere long, and on the shelves are hosts of Mignonette—also a speciality of the Messrs. Sweet. Of Paul Crampel and Ivy-leaved Pelargoniums, the Roses, Verbenas, Hydrangeas and Boronias this is not the time to write, and this brief note of one of the largest and finest plant factories to be found in the country must conclude with a mere reference to the quantities of scarlet-fruited Solanums, most of which will be distributed almost literally "from John o' Groat's to Land's End" to add brightness to thousands of homes and many festive gatherings during Christmas time and the early part of the New Year. C.



FIG. 139.—HEATHS FOR CHRISTMAS DECORATIONS AS GROWN BY MESSRS. J. SWEET AND SONS.
The four plants on the left are of *Erica melanthera*; the remaining four are forms of *E. gracilis*.

of a beautiful Heath, a gaily-fruited Solanum, a Begonia, a Fern or a Palm.

That the pot plant business is already of large proportions becomes obvious if a visit is paid to one of the principal nurseries in which plants are grown for the supply of the market. One such nursery is to be found at Whetstone, close to Oakleigh Park, Barnet and Totteridge. Here, some thirty-five years ago, Mr. James Sweet, V.M.H., founded the business now well known throughout the trade, though practically unknown among private gardeners. So greatly has the business developed that the glass houses alone cover twelve acres of ground, and there are at least half a dozen houses 400 feet long (nearly half a mile in all, if placed end to end), and others 200 feet to 250 feet long. The place is a veritable plant factory, in which three generations of the Sweet family have devoted their attention to the production of perfect pot plants in hundreds and thousands. The difference between a first-class pot plant and a moderate one is obvious to the retailer and his customer, but the cultural item that makes all the difference in quality and price may be a very small matter, though, perchance one which was discovered only as a result of the experience of a score of years.

Messrs. Jas. Sweet and Sons grow about fifty

cultivated for the Christmas trade are *Erica gracilis*, *E. g. nivalis*, *E. hyemalis*, *E. h. superba*, *E. h. alba*, and *E. melanthera*. These are grown in various sizes, from the tiny, dainty, one-year-old plant of *E. gracilis* and *E. g. nivalis* in 60 sized and even smaller pots, up to the large, beautiful and delicately fragrant five-year-old specimens of *E. melanthera*, a yard or more high, graceful in the extreme and smothered with tiny white bells. The accompanying illustration serves to show the range of size found in these Heaths in this nursery. The large specimens are *E. melanthera*, and the others *E. gracilis* and *E. g. nivalis*.

Heath cuttings are inserted at almost all seasons of the year, so that plants of various sizes in successional batches may be obtained. Ordinarily Messrs. J. Sweet and Sons' stock of *E. gracilis* in 48-sized pots is about 30,000; of *E. g. nivalis* 30,000; *E. hyemalis* 25,000; *E. melanthera* (the most difficult to propagate) 5,000; *E. persoluta* 6,000; and *E. ventricosa* and its varieties 10,000; while "small" of various kinds total upwards of 200,000 annually. Other kinds of Heaths cultivated at Whetstone for supplying the markets at various seasons of the year include *E. Willmorei*, *E. Cavendishiana* and *E. propendens*.

THE BULB GARDEN.

MUSCARI COMOSUM.

I HAVE only seen one variety of *M. comosum*, namely, *M. c. monstrosum*, but in John Gerard's day there were two or more, judging by his descriptions and figures. The beauty of the typical form lies chiefly in the 20 to 30 sterile flowers produced at the apex of the scape. These are of a bright blue, but the fertile flowers are less showy and have been variously described as of an overworn purple and amethystine-olive. The flowers of *M. c. monstrosum* are all barren, lengthened into slender, branched and more or less curled filaments, which have been described as light blue and also bluish-violet. There are no flowers in the proper sense of the term, but all the lateral ramifications from the scape, representing pedicels and flowers, are brightly coloured and retain their beauty for a considerable time. John Gerard described another form that was less ramified, and of a dark purple. Judging from his description this variety had some thready remnants of a perianth. This form would seem to have been lost. *M. c. monstrosum* must be of great age, for it was first described by an older writer than John Gerard. J. P.

FOREIGN CORRESPONDENCE.

NOTES ON RARE CONIFERS IN FRANCE.

It may interest readers of the *Gardeners' Chronicle* to know that a collection of over 80 species or varieties of Conifers, bearing cones, was exhibited by M. Jacques L. de Vilmorin at the recent meeting of the Société Dendrologique de France. These Conifers were chiefly from the Pinetum of the late M. Maurice L. de Vilmorin, at Les Barrès, a place well known for its School of Forestry, in grounds first planted by his great-grandfather. The full list of the exhibits will be published later in the *Bulletin* of the Society, but I venture to give some particulars of the following kinds:—

ABIES.

Among Conifers introduced by M. Maurice L. de Vilmorin, there is one of which seeds were collected in 1907 by R. P. Faurie, in Quelpart Island, Japan, and sown, both at Les Barrès and at Verrières, under No. 5,429. The seedling plants, which are now six to seven feet high, look very distinct from any other Fir in cultivation. The foliage is short, thick, and very glaucous. Two specimens have produced cones this year for the first time, at Les Barrès and Verrières. These cones are very distinct by their violet colour and protruding bracts from *A. homolepis* and *A. Veitchii*, both of Japanese origin. A cone of this special Fir was sent to M. Shirasawa for examination, who replied, "*A. Veitchii*, in perfect accordance with the coloured plate, No. 6 of my *Iconographie des Essences Forestières du Japon*." The young trees being very distinct in habit, as well as in many botanical characters, it remains now to discover what is *A. Veitchii* of gardens!

The hybrid, *Abies Vilmorinii*, raised by the late M. Henry L. de Vilmorin, in 1867, by crossing *A. Pinsapo* with *A. cephalonica*, is now well known, the seeds of the F_1 generation having been widely distributed and plenty of young trees raised by nurserymen, but the cone of this second generation had not been recorded. One tree at Verrières did produce cones this summer which were found to come nearer to those of *A. cephalonica* than to the other parent, as does the foliage of most of the F_1 plants.

PINUS.

Among Pines introduced by Mr. E. H. Wilson, eight numbers (some of which may be wrong) have already borne cones in this or the preceding years at Les Barrès, and may all be ranged under *Pinus sinensis*, a near ally to our *P. Laricio*. Among them, *P. yunnanensis* seems to be the finest of all on account of its pyramidal habit, vigorous growth, and long, pendant leaves.

Pinus leucodermis, from Bosnia and Montenegro, is bearing cones both at Les Barrès and Verrières; the largest tree in the first-named place is some 20 feet high, single stemmed and of perfect pyramidal growth, whereas those at Verrières are bushy. The dark, stiff foliage and grey bark make it very decorative. The cones are solitary or set by two-three at right angles, sessile, conical and of a dark purple colour. Although considered by Christ as a form of *P. Laricio*, it is quite distinct and much finer.

Two Pines are grown at Verrières under the names of *P. Ayacahuite* and *P. A. var. Veitchii*, which are said to be not true to name; these are now producing fine big cones somewhat distinct from the true type. It remains to be seen what these Mexican Pines are which have withstood without injury the very trying winter of 1916-17.

PICEA

A few specimens of the rare Himalayan Spruce, *Picea Morindoides*, are growing in France, the one at M. Allard's Arboretum, at Angers, being the oldest and largest. Those at Verrières and Les Barrès are some twelve to fifteen feet high, and have borne numerous cones for some years past. They are smaller and lighter in colour than those of *P. Morinda*, and always more or

less aborted on one side; their seeds are not fertile.

Although introduced from Japan more than 40 years ago *Picea Glehnii* is still a very rare Spruce in French collections; the specimen at Les Barrès has produced cones this year for the first time; they are only two inches long, with scales rounded, emarginate, and ciliated at the edge. The tree is of pyramidal shape, of compact habit, with leaves very short, square, stiff and of light green colour.

Of the rare *Picea Breweriana*, alluded to in *Gard. Chron.*, Oct. 2, p. 165, seedlings were raised by M. Chénault, of Orleans, some ten years ago, and were distributed to amateurs. The arboretum of the Vilmorin family received specimens which are now some three to four feet high, beginning to show the pendulous habit of their branches and the light and glaucous hue of their foliage. They have not produced cones.

Among the new *Piceas* introduced by Mr. E. H. Wilson, the following have produced cones this year for the first time: At Verrières, *P. asperata*; at Les Barrès, *P. complanata* and *P. Watsoniana*; at Pezanin, a new and large arboretum established since 1904 by the late M. Ph. L. Vilmorin in the centre of France, *Picea montigena*. It is too early to write of the value of these new Spruces, or of their cones, which may possibly not be full sized as yet.

Les Barrès also records the abundant fructification of *Gaultheria pyrolloides* var. *cuneata*, introduced by Mr. Wilson. This is a small bush, only one foot high, with white, fleshy fruits, looking as if they were flowers, the calyx being five cleft and the style persistent. *S. Mottet*.

PALMS OF THE RIVIERA.

My late friend, Prof. Beccari, retains only two true species of Phoenix, *P. canariensis* and *P. reclinata*, as African, and all the others as Asiatic. Very much has been written on the origin of the Date-palm, *P. dactylifera*, not known in the wild state, and which, with the Banana, *Musa paradisiaca* sub-species *sapientum*, may be one of the most anciently cultivated of plants. Anybody who has had much occasion to observe and compare the Date-palm with the other species of Phoenix will agree with Prof. Beccari, that it is a quite distinct species. As he, together with some other botanists, observes, the species of Phoenix most resembling the Date-palm is *P. sylvestris*, the flowers of which in fact cannot be distinguished from those of the Date-palm, but a most characteristic difference is, that, as already remarked, *P. sylvestris* never produces suckers, while the Date-palm perhaps produces them in greater numbers than any other Phoenix species. Also the natural habitat of *P. sylvestris* is the hot, rainy parts of India, while the Date-palm succeeds very poorly in such climate and prospers only in a quite opposite one, such as the desert climates of North Africa, Arabia and Persia. Prof. Beccari rightly considered that the Date-palm, disappeared as a wild plant now, originated somewhere around the Persian Gulf.

But if Prof. Beccari is right in eliminating the Date-palm from the African species, he probably is wrong in admitting only two as such. Here in Riviera gardens are found Palms under the names *P. senegalensis*, *P. leonensis*, and *P. pumila*, quite distinct from *P. reclinata*, and I have young plants received from different parts of Africa, which seem also to differ from this species. It is probable that the oldest specimens may have been raised from imported seeds of wild-growing African plants. Some strikingly ornamental old specimens are found cultivated under the names *P. senegalensis* and *P. leonensis*, in a few gardens of the Riviera, and it cannot be too strongly recommended to plant more. Many visitors to Nice will have admired the splendid tall Phoenix with a very slender trunk and a large crown of gracefully curved, deep green leaves, growing in front of the little English chapel in Boulevard Victor Hugo, and which any passer-by can observe at leisure. This is a specimen of Phoenix *leonensis*. *P. senegalensis*

is a larger species with a trunk less thin and leaves less dark green than in *P. leonensis*, while *P. pumila* is smaller.

I have several other Phoenix, whose names indicate an African origin, but shall not insist that all these Phoenix should be referred to one species.

The Asiatic Phoenix, other than *P. dactylifera* and *P. sylvestris*, are, according to Prof. Beccari, *P. humilis*—of which he distinguished five forms, *P. rupicola*, *P. acaulis*, *P. farinifera*, *P. pusilla*, *P. paludosa*—and *P. Roebelini*, all of which I have or have had in my garden except *P. paludosa*, of which I never could obtain fresh seeds. Many years ago I bought a Palm under this last name and planted it on a little island in a pond, so that its roots are always covered with water. Though it has made only little progress it has existed for some twenty years in such conditions, which would probably be fatal to most Phoenix. The reason that I feel doubtful about the identity of this Palm is that I obtained it from a dealer, who would give any name to his plants to sell them. If I had raised it from seed, I should have felt certain about its identity, because *P. paludosa* has seeds readily distinguishable from all other Phoenix seeds, in having the embryo placed at the end of the seed, while all the others have the embryo placed near the middle.

These Asiatic Phoenix are hardy here on the Riviera, like the African species. The most ornamental of them is *P. rupicola*, which also is the tallest-growing. *P. humilis* and its different forms are low-growing Palms, as the name indicates, which is also the case with *P. farinifera*, *P. pusilla* and *P. Roebelini*, this last so well-known as a green-house and indoor plant, while *P. acaulis* forms only a kind of large bulb and hardly any trunk.

I may end these remarks about the Phoenix in stating anew that hybridisation takes place with the greatest facility among all these species. One of the most curious hybrids I have is a specimen which possesses all the characters of *P. canariensis*, but forms an enormous mass of suckers. I bought it many years ago as *P. canariensis*, and it is very likely a hybrid between that species and *P. dactylifera* or *P. reclinata*, both characterised by their great production of suckers. It goes without saying, that many of these hybrids possess new and often striking characters, giving them a great ornamental value.

Lastly, I may observe that, so far as my experience goes, the fruits of all Phoenix, except those of *P. canariensis*, are of a more or less agreeable, sweetish taste, though they all, except those of the Date-palm, have only a sparse flesh. *Dr. A. Robertson Proschowsky, Jardin d'Acclimatation, "Les Tropiques," Nice, France.*

HARDY FLOWER BORDER.

PHYTOLACCA DECANDRA.

This plant never fails to attract attention, and specimens growing in the grounds of Chepstow Castle are always a source of interest to many visitors, while a batch of plants grown at Tutshill, near my residence, has aroused the curiosity of many, judging from the number of times I have been asked the name.

The plant is commonly known as the Virginian Poke Weed, Pigeonberry and Red-ink Plant. The greenish-white flowers are inconspicuous, and are succeeded in the autumn by dark, purple berries. These are very attractive, and are filled with crimson juice. The species is said to reach a height of ten feet, but I have only seen plants between four and five feet. The roots are large, fleshy and poisonous and, apparently, the plant will succeed in almost any position, or any kind of soil. Propagation is affected by division, and the plant may also be raised from seeds. *P. decandra* is undoubtedly an unique subject for the wild garden or large, herbaceous border. The plant is a native of America, and the word Poke is said to be derived from the American Indian word *pocan*, which apparently referred to any plant yielding a red or yellow dye. *T. W. Biscoe, Tutshill, Chepstow.*

DECEMBER VEGETABLES.

Not much change has to be recorded this month as compared with November in the kinds and varieties of vegetables in use. Cabbages and Savoy's are, as last month, our chief supplies in bulk. To these I would add the Red Cabbage, which, besides its main use as a pickling vegetable, is often used for cooking. We rely on the Blood Red and Red Dutch varieties; sow the seeds in April, prick the plants out on a well prepared piece of ground as soon as large enough, and allow them eighteen inches apart each way. We are using Cauliflowers from plants which were lifted carefully from the open ground after they had set, and before severe weather occurred; these were planted in deep frames.

We are now using the main winter batch of Celery, the early lot having been finished. Seeds were sown on March 8 and the plants raised in the same way as the early supplies. Four varieties are grown for late use—Aldenhams White, Aldenhams Pink, Invincible White, and Standard Bearer. Successional plantings were made in well-prepared trenches, commencing about mid-June so as to ensure supplies up to about the end of March. About mid-September the earthing-up operations commenced, and we are now able to draw upon the earlier plantings.

Green Marrows are over, and only the fruit ripened for storing remain, and these, and also Pumpkins treated in the same way, are very useful for a change during the winter months.

We are now using Spinach from the August and September sowings of the Winter or Prickly variety, as previously noted, and as a substitute, when severe weather sets in, we rely on Perpetual Spinach, the foliage of which is cooked in the same way as true Spinach. A sowing is made on a finely-raked piece of ground, in drills 15 inches apart, about the middle of March, and two further small sowings at intervals of a month, to keep up the supplies, the plants being eventually thinned to nine inches apart each way, and drawn on when ordinary Spinach is not available. This is very hardy, reliable, and makes a good substitute.

Brussels Sprouts and Leeks are yielding full supplies now, and are certainly two of the most useful winter vegetables we have. The various root vegetables available are the same as noted last month.

There are a few important additions to last month's list, which help to extend the variety, or take the place of sorts that have finished.

A sowing of Broccoli was made about April 20. We find the best way to protect Broccoli against frost is to turn the plants down with their heads towards the north, accomplishing this by taking out a trench about fifteen inches in depth on the north side of the row, and turning the plants over by inserting a fork under them. In very severe weather a covering of straw or Bracken should be placed over them in addition to the soil placed over the stems. Plants should be allowed 30 inches between the rows and about 27 inches from plant to plant. The varieties we chiefly depend upon are, for this season, Michaelmas White, Christmas White, and Snow's Winter White.

Borecole or Kale will shortly be coming into use, so must be mentioned now. Of this fairly large group the two varieties we shall draw on soon are Cottagers' Kale and the Scotch or Curly Kale. Both these are too well known to require any introduction, but I would urge that more use be made of them in small gardens. These were raised here at the same time and in the same way as the Broccoli, the only difference being that slightly less distance (2 feet) is allowed between the plants in the rows. Of the Scotch Kale we depend chiefly on the two varieties, A1 and Dwarf Green Curled.

The only additional root vegetable in use is the Chinese Artichoke, not a well known one, but one that affords a variation in the vegetable list. These we are now digging from the plot where we inserted the seed tubers about the beginning of April, utilising a small piece of ground which had been enriched for a previous crop. This was given a forking, dressed with

soot and salt, and left rough for a time. Afterwards it was firmed down to a level surface, and the tubers inserted in holes dibbled three inches deep and one foot apart, with a distance of eighteen inches between the rows.

Seakale falls to be added to the list, as we aim to have supplies from now onwards, though, by means of retarded roots, it is possible to have supplies practically the whole year round. We lift the roots from the open as required, remove the foliage, and pack them closely together in deep boxes, using a little fine soil around them. We then place the roots in the darker end of the Mushroom house, syringing lightly with tepid water each day, and in about a month the young blanched shoots are ready for cutting. Seakale is also forced in the permanent beds by means of Seakale-pots covered with fermenting material such as leaves, whilst still later supplies are procured by ridging the soil over the plants in the beds.

We are still making full use of such salads as Mustard and Cress, Cucumbers and Tomatoes. The Lettuce and Endive we obtain from the plants raised from seed sown in the autumn and

POTATO TRIALS IN SOMERSET.

A TRIAL of Potatoes was conducted by the Somerset County Council during 1920 at four centres for the purpose of introducing to the notice of market growers early varieties immune to Wart disease and to compare their qualities with susceptible early varieties; also to estimate the earliness and cropping powers from an early marketing point of view. The varieties tested were Epicure, Dargill Early, Eclipse, and Resistant Snowdrop. Epicure gave much the best yield and Resistant Snowdrop the poorest. The comparative values of the yields were: Epicure, £112 11s. 11d.; Dargill Early, £79 0s. 11s.; Eclipse, £70 7s. 11d.; and Resistant Snowdrop £43 3s. 9d. There was a considerable variation in the yield of the same variety in the different centres, which may be due to several causes. The Cheddar centre, giving the heaviest yield of Dargill Early, was lowest with Snowdrop. Merriott centre gave the lowest total yield of the four varieties. A selling price £10 per ton was fixed for the purpose of comparison in value.



FIG. 140.—APPLE JOY BELLS; A NEW DECEMBER DESSERT VARIETY.

FRUIT REGISTER.

APPLE JOY BELLS.

THIS new dessert Apple was exhibited by Mr. Will Tayler at the meeting of the Royal Horticultural Society on November 30, 1920, when it was favourably commented on by the members of the Fruit and Vegetable Committee. Following the usual custom an award was not made, as the tree had not been inspected by members of the Committee, but the raiser was asked to submit fruits again next season, when probably a deputation will be appointed to view the tree. It will be seen from the illustration in Fig. 140 that the variety is of medium size, broadish at the base, with a somewhat conical apex. There are two or three pronounced ridges about the eye which is open and set in a fairly wide basin that is marked with parallel lines of fine russet. The skin is a rich deep crimson on the side exposed to the sun, but paler on the reverse, the rich gold ground colour showing through. The stalk is $\frac{1}{2}$ inch long and set in a deep cavity, and this also is marked with russet. The raiser informs us that the parentage is unknown and also states that the tree has a sturdy, somewhat upright habit of growth and makes very vigorous branches. It is a first-rate dessert Apple for the season, the flavour being very delicate, with a fine aroma, and the flesh is of a yellow colour and tender.

planted in frames prior to the arrival of bad weather. By means of successional sowings we generally manage to maintain fairly full supplies until those grown in the open come in again.

Parsley, Garlic, and Horseradish may be added to the salad list, though they more often come under the heading of herbs and garnishing vegetables. Garlic we grow in the same manner as Shallots, and to those who care for the flavour it is a useful addition to made-up salads. Parsley for winter use we obtain from a sowing made in August, the seedlings from which we plant out on various aspects. As a reserve for gathering when weather conditions are severe we place some of the plants in frames at the end of September, planting them six inches apart each way, and protecting them against frost by means of mats. Exhibition Curled and Moss Curled are our two favourite varieties, and of these we grow a very large quantity.

Horseradish I mention particularly now because at this period of the year thoughts turn to its use as a garnishing to the Christmas beef, and for sauce. We lift the roots from half a bed now, leaving the other half for next season's supply, and the roots thus lifted we store in ashes for current use. As the roots are lifted we remake the half of the bed thus disturbed, inserting the small portions which in their turn will provide a supply in 1922. *Edwin Beckett, Aldenhams Gardens.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Firm Rooting Medium for Wheat.—Mr. Molyneux' note (see page 268) on a firm rooting medium for Wheat is to the point. Since the Ploughing Order came in force many farmers have been called upon to plough pasture land as a means of producing more grain. In many cases the crops have not been a success, and one of the chief reasons for this is that the land had not been sufficiently consolidated. From experience I feel certain had the land been ploughed and pressed and the corn sown broadcast, more grain and of better quality would have been produced, and less "lodged" crops would have been the result. In sheep and corn districts I have often seen the sheep used to tread in the Wheat after sowing, and also the heaviest implements used to settle the soil firmly after the winter's frosts. *H. Young, Acton, Wrexham.*

Potato Majestic.—Having again grown Majestic Potato from own saved and Scotch seed, the result may be of interest to some readers of the *Gard. Chron.* Taking my own saved seed first, these were selected last season from the best roots, sets of about 3 oz. weight being chosen. These were set up and sprouted before being planted 16 inches apart in drills 2 feet 6 inches apart. The result was a good crop of clean tubers of excellent cooking quality. The Scotch seed, which for this variety were somewhat small, were treated similarly. About 60 per cent. of the crop showed leaf-curl, and when lifted, as is usual with this disease, appears, most of the tubers were of seed size, but those which were free from the disease gave a good crop of excellent cooking quality. In future, I shall obtain large-sized sets of Majestic, which will be sprouted in the usual way, and cut and planted at once when planting time arrives. *H. Young, Acton, Wrexham.*

Failure of Rhubarb.—I am of the opinion that "Caltha's" theory, as stated, was the sole and only cause of the general failure of the Rhubarb crop this year. With me, and after a total collapse of growth in the spring, the plants recovered, and growth was again normal in the autumn. I refrained from pulling heavily from any roots, and from pulling at all from crowns intended for forcing. Roots introduced to heat in early November have started well, and apparently the produce will not be below the usual quality. The variety being forced is *Linnaeus*. *H. Wheeler, Wenvoe Castle Gardens, Cardiff.*

Naturalising Primulas in Woodlands (see page 287).—Your correspondent, in his excellent article on the above, omits from his list one of the very best Primulas of the Candelabra group, viz., *P. Lissadell Hybrid* (originated, I believe, at Lissadell, Co. Sligo; *P. Cockburniana* × *P. pulverulenta*). It is a very strong grower, and its brilliant scarlet flowers make it most effective. The stems are covered with white farina. It flowers at the same time as *P. japonica*. *P. helodoxa* does very well in thin woodlands, but I find *P. pulverulenta* is the first to flower, then *P. japonica*, *P. Lissadell Hybrid*, *P. helodoxa*, *P. Beesiana* and *P. Bulleyana*, with the hybrids which I know by the name of "Asthere Seedlings." *G. H. Dalrymple, Bartley, Hampshire.*

Winter-Flowering Carnations.—As a devoted admirer and cultivator of Perpetual-flowering Carnations, I was interested in Mr. W. A. Cook's article on page 278. There is one point in cultural detail which should, however, always be mentioned for the benefit of inexperienced cultivators, and it has been omitted by Mr. Cook. I refer to the stopping of young plants, which either makes or mars the successful production of bloom, both as regards quantity and quality, during the dull months of November and December, January and February, particularly in the north. My experience is that while many gardeners grow Perpetual-flowering Carnations for the purpose of producing flowers in

winter, comparatively few succeed in their object, chiefly through their lack of appreciation of the plants' requirements in this direction, and one might write a lengthy article on this subject. But I would only remark, that, in Scotland, the final pinching of the young plants should be completed by the first week in June, and the operation can only be extended for a period of three weeks more in the south. The object is to have all the flower buds in a more or less forward state of development by the end of September after which date development is very slow. Forcing or coddling results in more harm than good. Another contributory cause to non-success is over-potting, and for the Enchantress type I prefer March-struck plants, stopped once, and flowered in 5-inch pots, to struggling with earlier-rooted cuttings to make specimen plants in larger pots. *W. M. M., St. Andrews.*

Eucharis Grandiflora.—It may interest readers to know that *Eucharis Grandiflora* is grown extensively in our nursery here, as the enclosed photograph (see Fig. 141) will show. The plants have done so well here since they were planted eighteen months ago, that I thought some of your readers would like to know that this beautiful old favourite stove plant can be grown quite successfully and profitably on nursery lines. The house they are



FIG. 141.—EUCHARIS GRANDIFLORA (AMAZONICA) AT HUDDERSFIELD.

in is a lean-to stove. The bulbs were planted in a narrow bed at the foot of the back wall. The bed is about 1 ft. wide and 2½ ft. deep, and was made by placing stone slabs immediately behind the row of hot-water pipes, and fixing these slabs with iron ties, set 8 ft. apart. The space thus formed between the slabs and the wall was then filled in with rough clinkers and corks to form drainage to the depth of 1 ft., on these was placed a layer of good turf in lumps, then a mixture of fibrous loam, sterilised cow manure and leaf mould. The whole of the soil was allowed to settle and warm through for a week, and then the bulbs were planted. In front of the Encharis are tall Palms. These provide the necessary shade, while the hot pipes at the foot of the Encharis bed create an atmosphere which, to my mind, is ideal for the successful culture of this beautiful plant. At the time photograph was taken (second week in November) I counted more than 400 spikes in a length of 20 yards, each spike carrying from four to six perfect white blooms. The length of the bed is 75 yards. I shall be interested to learn whether any other grower cultivates such a large stock of *Eucharis*, as I am informed by all who have seen our plants that good *Eucharis* plants are exceptionally rare. *Tom Blackburn, Almondsbury, Huddersfield.*

SOCIETIES.

ROYAL HORTICULTURAL.

DECEMBER 14.—On this date the Royal Horticultural Hall, Westminster, contained few exhibits, and visitors were not numerous. The small display was due almost entirely to the wintry conditions prevailing; five or six growers, chiefly of Orchids, had arranged to exhibit, but were prevented from doing so owing to the cold weather. One Gold Medal was awarded—to Orchids.

Floral Committee.

Present: Messrs. H. B. May (in the chair), Jas. Hudson, John Green, John Heal, C. R. Fielder, Thos. Stevenson, W. Howe, J. Jennings, H. J. Jones, C. Dixon, Arthur Turner, R. W. Wallace, Chas. E. Pearson, E. F. Hazelton, W. P. Thomson, E. H. Jenkins, R. C. Notcutt, Reginald Cory, H. R. Darlington, W. J. Bean, E. A. Bowles, G. Reuthe and Wm. Cuthbertson.

AWARDS OF MERIT.

Carnation Edward Allwood.—A bright scarlet perpetual-flowering variety of good size, form and substance, but some of the blooms show splashes of white which rather detracts from the otherwise brilliant beauty of the variety. Shown by Messrs. ALLWOOD BROTHERS.

Chrysanthemum Christmas Wonder.—This is a very free-flowering, single white variety of very firm substance. The flowers are small and produced in sprays on long stems. Shown by Mr. H. J. JONES.

Chrysanthemum Winter Glow.—A useful, late, reflexing Japanese variety of fair size and excellent substance. The colour is rich, deep, rose-pink. Shown by Mr. H. J. JONES.

GROUPS

There were fewer than half a dozen exhibits before this Committee, consequently readers will understand that the exhibition was an unusually small one.

The principal exhibit was one of Chrysanthemums, from Mr. S. AISH, Cissbury Nursery, Dunstable. It consisted of thirty vases of blooms in as many varieties; the best representations were of December Gold, Edith Cavell, Souv. de W. Clibran, Baldock's Crimson, Heston White, Lady Stanley, Nagoya, Wm. Turner, Golden King, Tom Lindsey, Niveus, Winter Cheer, Miss Willcox and Brilliant. These all served to show their usefulness as late-flowering sorts. (Bronze Flora Medal.)

Messrs. ALLWOOD BROTHERS had a small exhibit of perpetual-flowering Carnations, the blooms all clean and bright. Leading varieties were Wivelsfield White, Triumph, Salmon Enchantress, White Enchantress, Edward Allwood, Wivelsfield Claret and Wivelsfield Beauty. (Silver Banksian Medal.)

Messrs. REAMSBOTTOM AND Co. showed a few of their Anemones. Mr. J. J. KETTLE brought up a few fragrant Violets, these including a number of bunches of the variety Mrs. Lloyd George. (Bronze Banksian Medal.) Mr. C. ENGELMANN set up a little bank of his useful late-flowering new Forget-me-not *Myosotis oblongata Bluebird*. A pleasing and fragrant white Freesia named Fletcher's Giant White promises well, as shown by Messrs. H. CHAPMAN, LTD., Rye.

Messrs. STUART LOW AND Co. were exhibitors of Carnations and made a bright little display with large vases of Mrs. Ives, Mrs. C. Raphael, White Pearl, Lady Inverforth, and Winter Glow, and smaller vases of other sorts. (Silver Banksian Medal.)

Several exhibitors showed paintings of flowers and garden scenes; others showed garden plans.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), J. Wilson Potter, Frederick J. Hanbury, R. Brooman-White, Arthur Dye, Fred K. Sander, Charles H. Curtis, J. Shill, S. W. Flory, A. McBean, T. Armstrong, Pantia Ralli, and R. A. Rolfe.

Sir Jeremiah Colman, Bart., in the name of the Orchid Committee, on which he has served since its formation, congratulated Sir Harry J. Veitch on the Continental honour conferred upon

him, as reported in the *Gard. Chron.* of December 11, p. 283. Sir Harry J. Veitch replied that after the late lamentable war he was impelled to do his utmost to help those of our Allies in distress, and his reward was that he and those associated with him in the good work were successful, and that was more to him than anything else.

The Hon. Secretary reported that in consequence of errors in the entry papers at the last meeting, the following corrections had to be made. (See *Gard. Chron.*, December 4, p. 280)

—*Odontodia Juno* Pitt's var. (*Oda*, Coronation × *Odor. eximillus*), not *Odontodia Jupiter* Pitt's var., the cross having received a Preliminary Commendation as *Oda Juno*, May 28, 1918. *Odontoglossum Rosina magnificum* (*eximium* × *Lady Pirrie*), not *eximium* × *Lakinia*, which cross is *Odor. Eldorado*; *Cypripedium Bacchus* (*Nydia* × *Caractacus*), not *Nydia* × *Earl of Tankerville*. Flower with fine, white dorsal sepal tinged and veined with rose-pink, lip and petals yellow with red-brown shade and markings on the petals.

Awards.

FIRST-CLASS CERTIFICATE.

Laelio-Cattleya Schröderae gloriosa (*C. Maggie Raphael alba* × *L.-C. Bella alba*), from Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill). A very remarkable variety with large, perfectly-formed flowers with pure white sepals and petals, and a broad lip entirely of rich Tyrian-purple, with a few thin yellow lines on the white base.

AWARDS OF MERIT.

Odontoglossum × *Ardentidora* (*ardentissimum* × *Dora*), from W. R. FASEY, Esq., Holly Bush Hill, Snarebrook (gr. Mr. E. J. Seymour). A very pretty hybrid of large size and fine shape. Flowers heavily blotched with dark violet colour, the broad serrated margin white. The lip is white with distinct traces of the good form of *O. Pescatorei*, obtained through *O. ardentissimum*.

Cypripedium Memoria F. M. Ogilvie (*Curtmanni* × *Pyramus*), from Messrs. SANDERS, St. Albans. Flower of fine proportions and well marked. Dorsal sepal white, with heavy, dotted lines of dark claret-colour, changing to rose towards the margin. Petals and lip yellow, tinged and spotted with chocolate-red.

OTHER EXHIBITS.

Baron BRUNO SCHRÖDER, The Dell Gardens, Englefield Green, was awarded a Gold Medal, and a Silver Lindley Medal to his gardener, Mr. J. E. Shill, as a mark of the superb culture and general excellence of the plants of *Laelio-Cattleya Schröderae* staged, which bore together nearly 100 grand blooms, the sepals and petals being white, but the broad labellums varying in colour from rosy-mauve to deep Tyrian purple and with a varying extent of yellow in the centre and base. The whole of the plants were in irreproachable condition, and the Cultural Medal well deserved.

W. R. FASEY, Esq., showed *Cypripedium Georgius Rex* (*Alciades* × *Minos Youngii*), a very pretty hybrid with fine dorsal sepal effectively marked with purple and yellow; sepals and petals tinged with rose.

MESSRS. ARMSTRONG AND BROWN, Orchidhurst, Tumbidge Wells, showed the new and fine *Odontoglossum Magnum* (*gandavense* × *Doris*), a noble specimen with a strong two-branched spike of rich claret-coloured flowers with broad, white margins and front lobe to the lip. Messrs. SANDERS, St. Albans, showed *Cypripedium Goldcrest* (*Monte* × *insigne Sandersae*), with pale yellow flower having a white dorsal sepal, and faint tinges of purple in the petals and lip. Messrs. J. AND A. McBEAN, Cooksbridge, sent *Sophro-Laelio-Cattleya Rosalind* (*L.-C. Dominiana* × *S.-C. Pearl*), a pretty flower with rosy-mauve sepals and petals, and ruby-red lip with light base.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), S. T. Rivers, Ed. Beckett, A. W. Metcalfe, G. Reynolds, G. F. Tinley, T. A. Bunyard, W. Bates, Rev. W. Wilks, S. T. Wright, W. H. Divers, and Geo. Berry.

The only exhibit of importance before this Committee was a collection of Apples and Pears shown by Sir MONTAGUE TURNER, Bedford, Havering, Romford, Essex, for which a Silver-Gilt Banksian Medal was awarded. This very commendable collection included excellent fruits of such varieties of Apples as Cox's Orange Pippin, Ribston Pippin, Bedford Seedling, Duke of Devonshire, Emperor Alexander, Chas. Ross and Rival, whilst the best Pears were Beurré Diel, Emile d'Heyst, and Beurré Alexander Lucas.

SCOTTISH HORTICULTURAL

DECEMBER 7.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Miss Burton, President in the chair. The evening was devoted to the reading of the prize-winning papers in the competition for juniors. The first prize was awarded to Mr. Louis Robert Astley, Auchincruive Gardens, Ayr, for a paper on The Pruning and Cleaning of Indoor Fruit Trees, and the second to Mr. J. G. Kerr, Dundas Castle Gardens, South Queensferry, for a paper on Mendelism.

There were exhibits of Chrysanthemums from the President, Mr. W. Crichton, Morton Hall Gardens, Midlothian, and Mr. J. A. Sword, Inverlmond Gardens, Cramond, Midlothian.

The annual business meeting of the Association, when the Council's Report and the accounts for 1919, will be presented, will be held on January 11, next, and on the 12th, the date of the annual meeting of the Royal Caledonian Horticultural Society, the Association will be incorporated in the latter body.

NATIONAL CHRYSANTHEMUM.

THE final meeting of this society's Floral Committee for the year now ending was held at Essex Hall Strand, on Monday, December 13. There was a good attendance, but only one novelty was brought forward.

FIRST-CLASS CERTIFICATE.

Chrysanthemum The Favourite.—A particularly useful, late-flowering, white variety, with blooms of good size, form and substance. The variety belongs to the incurved section, and possibly, under special cultivation, blooms of exhibition standard might be obtained, but the chief value of the variety lies in its lateness and freedom of blooming. Shown by Messrs. W. J. GODFREY AND SON.

In the evening of the same day, a meeting of the Executive Committee was held at the offices of the British Florists' Federation, 35, Wellington Street, Covent Garden, when Mr. E. F. Hawes presided. The principal business of the evening was in connection with the Society's exhibition and meetings in 1921. Matters are not yet settled, but it is expected that the show will be held on or about November 2 at Westminster, and that the meetings of the Floral Committee will also be held at the Royal Horticultural Hall on Mondays immediately preceding certain of the R.H.S. autumn meetings.

After the formal business, Mr. T. Stevenson gave a short lecture on Select Varieties of Chrysanthemums. He dealt with the Japanese, decorative, market, and single sections, enumerated about a score of varieties in each section, and gave his reasons for the selection in each case. Mr. Stevenson was heartily thanked for his contribution, and it is hoped that the lecture will be published in the Society's Annual for 1921.

ASSOCIATION OF ECONOMIC BIOLOGISTS.

A PROGRAMME of very considerable interest was presented at the meeting of the Association of Economic Biologists, held in the Imperial College of Science, on Friday, December 10. The president, Sir David Prain, occupied the chair, and the first portion of the meeting was devoted to short communications and the exhibition of specimens. Dr. B. Muriel Bristol, of the Rothamsted Experiment Station, showed some very beautiful cultures of Algae on solid media, obtained from the soil of the famous Broadbalk Wheat-field, whose algal flora she is studying. Recent investigations in America by Professor

J. Shramm and his pupil, Dr. Wann, have shown that the Algae may have an importance not inferior to that of the fungi and bacteria in the soil economy, and this particularly in relation to the nitrogen cycle. This is a line of work which is quite new in this country, and Dr. Bristol's investigations will be watched with the utmost interest, by both agriculturists and plant physiologists, for not only may her results have a direct bearing on farm practice, but they may throw a flood of light upon some of the more obscure nutritive processes occurring in green plants. An interesting exhibit was made by Dr. S. G. Paine, who showed preparations and photographs of bacteria with flagella stained by a new and improved method. Dr. Paine has also devised a new pattern of incandescent mantle for use with lamps for microscopic work, and this was demonstrated at the meeting.

Specimens of Douglas Fir severely damaged by *Phomopsis pithya*, Lindl., were exhibited by Mrs. Alcock. This fungus, which is new to this country has recently been described by Dr. Borthwick, who was present at the meeting, and commented interestingly on the exhibit. Mr. W. B. Brierley showed a very beautiful, signed photograph of Dr. Erwin F. Smith, of the United States Department of Agriculture. Dr. Smith is not only, perhaps, the most eminent living plant pathologist, his monumental volumes on bacteria in relation to disease in plants having earned for him an undisputed place in biological history, but he is a litterateur with no mean standing among the minor American poets. It is rare indeed that such literary gifts and an unerring sense of values are bestowed together with scientific leadership.

The first paper of the meeting was by Mr. W. J. Dowson, on Problems of Economic Biology in British East Africa. Mr. Dowson, who for some years was the Government botanist in this region, and has but lately returned, devoted his address primarily to a discussion of the relation between plant diseases and climatic conditions. Coffee-leaf disease and bud-rot of Palm were chiefly used as illustrations, and results of very considerable interest were elicited. The paper was discussed by Dr. E. J. Butler and Mr. F. T. Brooks.

A second paper was read by Dr. M. C. Rayner on Nitrogen Fixation in the Ericaceae. The work that Dr. Rayner has done on the mycorrhizal relations in this genus of plants is well known, and in the present paper a convincing case was brought forward to show that the fungus in question plays a very significant rôle in the nitrogen relations of these plants. In her original investigations Madame Ternetzk found that *Phoma radialis* was able to fix atmospheric nitrogen, and this has recently been confirmed by the very critical observations of Duggar at St. Louis. In view of Dr. Rayner's results it would now seem only reasonable to accept the view that this fungus at least can utilise free nitrogen. Work at Rothamsted is showing that members of the genus *Phoma* are not uncommon soil forms, and it may be that the fungal flora of the soil as well as the algal flora may prove to be important factors in the nitrogen cycle. Dr. Rayner illustrated her paper by lantern slides, diagrams, and specimens of *Calluna* seedlings grown with or without the mycorrhizal fungus and in the presence or absence of nitrogenous food supplies. The paper was discussed by Professor V. H. Blackman and Dame Helen Gwynne-Vaughan.

READING AND DISTRICT GARDENERS'.

DRUMMOND CASTLE, Perthshire, and its gardens was the subject of an interesting lecture delivered by Mr. H. H. Cook, of the University College Gardens, formerly gardener at Drummond Castle, to the members of this Association at the Abbey Hall, on Monday, the 6th inst. Mr. Cook gave a fascinating résumé of the history of the owners of Drummond dating back to the 16th century, also of the Castle and gardens which were built and laid out about 360 years ago. By the aid of lantern slides views of the extensive gardens and pleasure grounds were shown by the lecturer, who briefly pointed out the principal features of the place. Some

idea of the size of the gardens may be gathered from the fact that the Box edging of the flower beds and borders if placed end to end would reach to a distance of between nine and ten miles, and that last year no fewer than fifteen thousand plants of *Antirrhinum* and nine thousand *Pentstemons* were used, in addition to large numbers of all the most popular bedding plants.

The President, Mr. E. F. Moring, presided over a large attendance, and announced the result of the competition for six bulbs of *Allium* as follows:—1st, Mr. D. Turner, Coley Park Gardens; 2nd, Mr. T. Butcher, Glebelands Gardens; 3rd, Mr. E. J. Dore, Reading.

THE WEATHER.

WEATHER IN NOVEMBER.

After four days of cold easterly winds, a very warm spell of south-westerly weather set in in November, and this continued till the 17th of the month, subsequent to which a persistent south-easterly current was experienced, warm generally, but cut into in the middle by a very cold snap, lasting from the 21st to the 24th. There were scarcely any winds from the northerly points, but in spite of the great prevalence of those from the southern semi-circle, the month was a thoroughly dry one. It was, however, hazy and unhealthy, with an exceptional deficiency of ozone for Southport. The mean temperature of the air exceeded 45°, and was a couple of degrees above the average. The ground was, relatively, much cooler. Only 50 hours of sunshine were experienced, or six fewer than usual. The total rainfall, however, barely amounted to 1.40 inch, and was 1.76 inch below the 45 years' average for November. Yet the normal evaporation was not reached, the air being humid, and often stagnant, the sunlight being weakened by haze. Frost occurred in the shade on the 22nd, 23rd, and 24th; and upon the grass on seven nights. A west-south-westerly gale occupied 31 hours on the 15th to 16th. Hail fell on the 16th. Fog formed on the 5th, 22nd, and 23rd. There was no thunder.—*Joseph Bazendell, The Fernley Observatory, Southport.*

THE WEATHER IN SCOTLAND.

November was a dull month, but mild. Rain fell on 14 days, as against an average of 16 days, to a total of 2.27 inches, being 0.17 inch less than the normal. The wettest day was the 14th, with 0.56 inch of rain. Of sunshine we had the meagre total of 49.5 hours, being an average of 1.64 hours per day and a percentage of 20; there were 16 sunless days. With a mean of 29.92 inches the barometer varied from a highest of 30.42 inches on the 22nd to a lowest of 28.84 inches on the 15th. The mean maximum temperature was 49°, and the mean minimum 39°, giving a mean temperature for the month of 44° and a mean range of 10°. On the 9th we had the highest maximum of 57°, and on the 23rd the lowest minimum of 22°, an absolute range of 35°, while the lowest maximum of 42° was registered for the 22nd and 23rd, and the highest minimum of 52° on the 9th. On three nights the temperature fell below the freezing point. The grass thermometer gave a mean minimum of 33°, with a lowest of 13° for the 23rd; there were 9 nights of ground frost. At one foot deep with a mean of 44° the soil temperature fell from 46° to 41°, and then rose to 42°; the wind was variable in its directions, but chiefly from the west; there were gales on the 13th and 15th.—*John Davidson, Director of Studies, St. Andrews Provincial Committee at the Training College Gardens, Kirkton-of-Mains, near Dundee.*

Obituary.

William Harris.—We regret to record the death of Mr. William Harris, Superintendent of Public Parks and Plantations, Jamaica, after an uninterrupted service of thirty-nine years in that island. He was born in 1860 in the North of Ireland, where his father was a gardener. At the age of seventeen he entered the nursery of Messrs. John Cowan and Co., Garston, Liverpool, and in June, 1879, he entered Kew. After two years' service there he was appointed Superintendent, King's House Gardens, Jamaica. Harris was one of a considerable number of first-quality gardeners who, during the past fifty years or so, have been appointed from Kew to useful positions in the Colonies and India. Some of them have done well; some have not, though it has not been for want of trying. Harris was known to be one of the most capable men in his department. He knew it himself, too, and grumbled when he saw inexperienced young men preferred for no other apparent reason than that they were "public school" men. Harris was a good botanist, as well as a skilled cultivator and organiser. In recent years his health had not been good, and in September last he went to stay with his son in Kansas City, where he died on October 11.

In accordance with his wish, his body was cremated.

Arthur Chapman.—We announce with the very deepest regret the death of Mr. Arthur Chapman, gardener to Lieut.-Col. Sir George Holford, K.C.V.O., C.I.E., Westonbirt, Gloucestershire. His death occurred on the 9th inst., following a period of ill-health extending over several months. In the early part of the present year Mr. Chapman suffered a severe bereavement in the loss of his youngest son, who died somewhat suddenly, and his great grief reacted on his health. Mr. Chapman was one of the foremost gardeners of the country, and the public had ample opportunities of seeing the results of his ability at important exhibitions, not only in London, but in the provinces, for, as is well known, Sir George Holford is not only one of the keenest gardeners in the country, he is a great patron of flower shows, and horticulturists generally are greatly indebted to him for the opportunity he affords of inspecting his beautiful



THE LATE ARTHUR CHAPMAN.

and choice plants. Westonbirt has long been famed for its fine gardens, and older readers will remember that the father of the present owner was also one of the foremost horticulturists of his time. Seeing that Westonbirt has belonged to two succeeding generations of keen gardeners, it is not surprising that the gardens and grounds constitute one of the show places of the country and Mr. Chapman had no light task in maintaining them in the highest degree of efficiency; how well he succeeded is generally known. Although a good all-round gardener there were several departments of horticulture in which he greatly excelled, and he is best known, perhaps, as a cultivator of choice indoor plants. The Westonbirt collection of *Hippeastrums* is probably one of the finest in the world, and how well he grew these plants, many of his own raising, has been amply demonstrated at shows not only in this country, but on the Continent. We have not the exact date of his entering Westonbirt, but it must have been nearly 50 years ago. He served his apprenticeship at Hedsor, and gained further experience at Greenlands, the residence of the late Mr. W. H. Smith, afterwards entering on his long service at Westonbirt, first as foreman and subsequently as gardener. Mr. Chapman was a man of charming disposition of great integrity, and was esteemed by all who knew him. The funeral took place on the 12th inst. His remains were laid to rest in the beautiful grounds attached to the little church in the Westonbirt gardens. His employer placed a magnificent wreath of *Orchids* at the foot of the grave, bearing the following words: "From a life-long friend." Mr. Chapman leaves a widow and family, to whom we extend our deepest sympathy.

ANSWERS TO CORRESPONDENTS.

BROCCOLI AND CAULIFLOWER: *B.* Broccoli and Cauliflowers are akin and merely varieties of *Brassica oleracea*. The Broccoli have been so improved in quality that they are now scarcely distinguishable from the best Cauliflowers. The principal difference is that Broccoli is more hardy in constitution, and the leaves incurve over the heads in some quantity, thus forming a natural protection from frost.

BROWN ROT: *T. J. H.* The trees should be sprayed with strong lime sulphur before the buds burst in the spring. Lime sulphur is made as follows:—3 lb. of lime, 4 lb. of sulphur in 15 pints of water. The lime should be in lumps and not in powder form, put into an iron pot, slaked with a little water first, and then the rest of the water added. It should be placed on a fire, brought to the boil and kept boiling while the sulphur is added. Boiling should continue for some time after the addition of the sulphur. Gather all mummified fruits hanging on the trees at this time of the year and burn them; also cut off all infected and cankered spurs and destroy them by burning. Next season, any of the Apples showing signs of the disease should be gathered and destroyed as early as possible.

CELERY: *R. J. B.* For the position described an early crop of Celery, for use before the end of December, would succeed, but it is unlikely that either Carrots or Parsnips would prove satisfactory there. Jerusalem Artichokes would be a suitable crop, or the site could be used for Rhubarb.

CONSTRUCTION OF COOL VINERY: *T. O. C.* Your proposed house, 10 ft. wide against a 10 ft. wall, and an upright front of 3 ft., will give a 12 ft. rafter inside the walls, and you should be able to grow vines in it, though we would prefer a wider house. You propose for the upright front 1½ ft. of wall and 1½ ft. for ventilators, but do not say whether the upper half is to be glass or wood. It would be better not to have 3 ft. without light. On the contrary, 18 in. of glass would not be worth the extra cost compared with wood or masonry. If you wish to adhere to the 3 ft. and to have glass this should be 2 ft. in height, as 1 ft. of masonry above the ground-level will be sufficient. But if you do not intend to use glass, why not be content with 2 ft. in height including wooden ventilators, 1 ft. in depth? This would not make your roof too steep and it would add slightly to the length of rafter, besides admitting more light to the base of the vines, which should be encouraged to make lateral growths down to the ground-level.

CREeping RANUNCULUS OR BUTTERCUP: *H. G.* The leaves of this plant may be destroyed by dusting them with lawn sand till the foliage is quite grey. This should be done in spring when the plants are commencing to grow, and at a time when the weather is likely to remain dry for twenty-four hours or more. Repeat the dressing when the leaves have fairly started to grow again in order to exhaust the creeping stems of their store of food. The lawn sand should be perfectly dry and powdery. The first application should be made broadcast to encourage the grass to grow; subsequent applications should be confined to the Buttercups. Another remedy consists of one part each of sulphate of iron, and sulphate of ammonia to two parts of sand. Use 4 oz. of the mixture to the square yard in a dry, powdered state broadcast. This may be done in winter in dry weather, but spring is the better time.

FREESTIAS UNHEALTHY: *J. P.* The trouble is not due to either fungous or insect agency, but is most probably the result of excessive atmospheric moisture in the house. Keep the plants somewhat drier and ventilate the house more freely.

Communications Received.—*R. T.—A. R.—M. A.—S. A.—C. G.—W. W.—H. F. L.—T. W. B.—G. H. H.—S. J.—R. and Co.*

Gardeners' Chronicle

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.8.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, December 22, 10 a.m.: Bar. 29.5, temp. 45°. Weather—Bright.

Tree Lore.

Mankind has long associated plants, and especially trees, with mystic influences, and almost as far back as the beginning of history we read of the sacred character ascribed to trees and the part they played in forms of worship and sacrifice. Mr. Ernest V. Laing dealt with many of the myths and legends associated with trees in a paper read at a meeting of the University of Aberdeen Forestry Society.* A beautiful tree in its full grandeur is capable of casting a spell over the beholder, but, as Mr. Laing states, there is a wide gulf between the man who loves trees either with the instinct of an artist for the beautiful or the love engendered by memory and association, and the man who is admiring something which he has never seen before equalled in strength or beauty. He illustrates this distinction by the classical incident of Xerxes and the celebrated Phrygian Plane. The warrior was so impressed with the size and majesty of this tree that he halted his army for three days at Phrygia in order to pitch his tents under the branches. The three days were sufficient to enable the Greeks to put the defences of Thermopylae in order, with results so well known. Among the ancients a belief existed that trees were conscious personal beings, and this belief found expression in sundry acts of worship and sacrifice. The longevity of trees also impressed the credulous, and it is recorded so recently as the beginning of the nineteenth century that De Candolle expressed a belief in the immortality of trees, which he stated did not die of senile decay, but only as the result of injury or disease. The healing or harmful properties of trees may serve to explain in some measure

the reason for tree worship. The twigs, leaves and bark were sometimes supposed to contain an in-dwelling spirit or demon, according as they were beneficial or malignant to the receiver. Thus some trees were to be avoided, and others revered for their healing properties. Hence we find that the tree of life or immortality occurs in many mythologies. The fruit of the Chinese tree of life is given by fairies to their favourites, and they then become immortal. The Polynesians believe the dead assemble on a huge tree with dead and living branches and only those who tread on the living branches come back to life. In all these myths Mr. Laing sees nothing more than the imaginative extension of the use of plants and herbs and leaves of trees in the medical lore of all races, aided by the universal custom of tree worship. In Australia and the Philippine Islands it is affirmed by some of the natives that the good folk are transformed into trees at death. Belief in tree souls and tree spirits is common in many parts, as when the south-eastern Asiatic prays before cutting down a tree, the tree being considered as having a demon or spirit. African negroes likewise cut down certain trees in fear of the anger of their inhabiting demons. In Africa also trees are prayed to and sacrifices offered to them in time of sickness. The Siamese



FIG. 142.—A FINE STANDARD POT-PLANT OF BOUGAINVILLEA GLABRA VAR. SANDERIANA. (See p. 308.)

believe that by offering cakes and rice before felling a tree, the propitiated spirit passes into the boat made from its former residence and becomes its guardian spirit. North American Indians hang offerings on trees or place them on rocks to propitiate the spirits and procure good weather and hunting. In some parts of the East a tree is supposed to be capable of diverting or taking ill-luck to itself. Thus in the Punjab, if a man has lost several wives in succession, he is married to a tree before another marriage; and the tree is assumed to die in the place of the woman. Many tribes in India observe the custom of marrying both bride and bridegroom to trees as a preliminary ceremony; perhaps to divert all evil influences to them, or possibly with a view to obtaining good luck from them. Many remnants of primeval forests remain as a result of the sacred character once associated with trees, and especially groves.

Names like Holy Oak and Holy Rood record old memories of trees and groves. It is interesting to know that it was a great and sacred Lime tree, or Linden tree, with three stems, standing in South Sweden, which gave the name to the family of Lin-

naeus. Much interesting mythology associated with our own familiar trees is dealt with by the writer of the paper. He deals a subtle blow at the legend of the speaking Oak by suggesting that it was a hollow specimen in which a priest might be concealed. The association of the Mistletoe with the Oak being such a rare occurrence, Mistletoe growing on the Oak was regarded by the Druids as indicative of the peculiar favour of heaven, and trees on which it grew were regarded with religious reverence. Although it is difficult to account for the Mistletoe being so rarely found on the Oak in this country, the legend exists that all Mistletoe growing on Oaks was destroyed after the last of the Druids were gone. Mr. Laing considers that it is possible that the Mistletoe of the Druids may be confounded with a species of Loranthus which is often found in association with Oak trees in England. In dealing with the Wych Elm the author gives the most likely derivation of the word "Wych" as meaning "salt," and that the trees were so called by our Saxon ancestors owing to the fact that they may have been found growing in the vicinity of salt springs. It is probable that the similarity of the name to "witch" gave rise to some of the superstitions connected with the tree, and its name may have arisen thus. It is interesting to learn that in olden times much Tea was adulterated with Elm leaves and the bark of the English Elm was used for cleansing the skin and making it fair, whilst the water in which the roots were boiled was used to prevent hair from falling out. American Indians regarded the Beech as a non-conductor of lightning, and in a thunder-storm always took refuge under its boughs. The same quality of being a non-conductor of lightning is said by the people in certain parts of Russia to be possessed by the Birch. The Yew has long been regarded with aversion as a tree of evil omen, and the ancients would neither sit beneath its shadows nor touch its fruits. The Juniper had a better reputation, for it was considered that the burning of Juniper wood expelled evil spirits from the dwelling. The practice of burning this wood in some parts of Scotland during the prevalence of an epidemic led to the inference that this was a remnant of a Druidical superstition. In the Highlands the Aspen is held in veneration owing to the belief that the Cross was made of the wood of this Poplar and that the leaves shiver mystically in sympathy with the mother tree. Mr. Laing's paper is absorbingly interesting, and, as the author states, we are all, if not poets, at least somewhat sentimental, at any rate as regards Nature, and trees must always be an attractive part of Nature.

Forestry in Scotland.—A highly promising state of affairs was reported by Mr. Sutherland, the Assistant-Commissioner to the Forestry Department for Scotland, at a meeting of the Council of the Royal Scottish Arboricultural Society, on December 15. Mr. Sutherland stated that already 50,000 acres of land had been acquired for forestry purposes a portion of this being purchased, but other parts taken on long lease or feued. Unfortunately, owing to the difficulty of obtaining plants, only about 2,500 acres could be planted this season. It was mentioned also, that of the land which had been acquired, the bulk consisted of deer forests, and that the arable land was almost negligible in extent. An interesting reference was made to the forestry schools at Beaulieu and Birnam, at which some twenty-seven students were being trained, a number to be shortly greatly increased. That at Birnam is for ex-Service men.

The Biological Estimation of Soil Fertility.—The best means of determining whether a soil is or is not rich and fertile is to find out what

* "Tree in Myth and Legend," by Ernest V. Laing, President of the Aberdeen University Forestry Society. *Transactions of the Royal Scottish Arboricultural Society*. Vol. XXXIV., Part II. November, 1920.

crops it will yield. This, however, is a long and costly problem. Hence it is often customary to resort to chemical analysis and to infer from the composition of the soil under examination, and by comparison with that of known fertile soils, the cropping powers of a soil. The method, however has its limitations and efforts are now being made to use the micro-flora of the soil as an indicator of its fertility. Needless to say, much work will have to be done before results of practical value are achieved, but it is interesting to note that cultures of soil organisms in the laboratory whereby a measure of the amount of nitrogen fixed by them is obtained, serve to distinguish a fertile from an unfertile soil.* We may be sure indeed that it will not be long before every well-equipped Agricultural College will have a laboratory for soil bacteriology attached to it.

Mr. George P. Miln, J.P.—Readers will learn with pleasure that Mr. George P. Miln, J.P., Managing Director of Messrs. Gartons, Limited, Warrington, has been elected a Fellow of the Linnæan Society. Mr. Miln is regarded as one of the leading authorities in this country on Cereals and Grasses, and

Horticultural Society, and is published by the R.H.S., price 2s., by post 2s. 3d.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Landscape Gardening.*—On page 136 "J. W." recommends young gardeners to lay aside rule and compass, and take colours, canvas, etc., and learn to imitate Nature (the rule and compass being useless for that purpose), anticipating that an improvement in landscape gardening would consequently follow. Now, this is all very well if it could be accomplished; but when we consider the many disadvantages under which young gardeners labour, and even the manner in which they in general are remunerated for their services, a practical knowledge of the fine arts is surely too much to expect from them. Not but what it would be very desirable for gardeners to possess such a knowledge, but it ought to be considered more as an accomplishment than a qualification which they ought necessarily to possess. On the other hand, however, I would earnestly recommend that, instead of laying aside the rule and compass, they should study the use of them well. Every gardener ought to be able to give plans for, and to superintend the erection of, horticultural buildings of every

INDOOR PLANTS.

IPOMOEA HORSFALLIAE VAR. BRIGGSI.

This Ipomoea is a handsome stove climber, which produces its glossy, dark rose-coloured flowers in wonderful profusion, and continues in flower for several weeks. In common with most strong growing climbers, it is best planted out in a border, with a restricted root run. It has always been regarded as a difficult plant to propagate by means of cuttings; but it may be successfully increased by layering, and also by means of cuttings from a stock plant kept in a pot. The twiggy shoots produced by pot culture root readily. This is true of many other plants that are reputedly difficult to propagate by means of cuttings. J. C.

STANDARD BOUGAINVILLEAS.

As generally grown the Bougainvilleas require a large amount of root-space to be successful, but the illustration on page 307 (Fig. 142) shows what a wealth of flower may be obtained on standard plants. The photograph from which the illustration was prepared was taken by Mr. A. Nobbs, the gardener at Gennings, one of the Kentish seats of the Marquis of Ormonde, and it shows one of the dozen or so standard plants of *Bougainvillea glabra* Sanderiana he grows so well there. Notwithstanding the large size of the stem and apparent age the plant was only in its third year when the photograph was taken. When the single stem has reached the desired height frequent pinching is practised to lay the foundation of a good head, and in after years all that is necessary in this respect is hard pruning during the winter. Throughout the war these standards were wintered in an unheated lean-to greenhouse, and, being dry at the root, were unharmed during periods of hard frosts. A. C. B.

THE MILD SEASON AT PENZANCE.

EVIDENCE of the exceptionally mild winter is shown by the photograph (see Fig. 143) of a *Rhododendron* now in full bloom in these gardens. This tree is usually at its best about the beginning to the middle of February, but at the time of writing, December 11th, it is a mass of blossom. It is, I believe, a variety of arboreum, not a particularly large specimen, but certainly a very attractive one. I believe it is about thirty years since it was planted. Visitors from warmer climes and local residents have been greatly surprised at the profusion of its rose-coloured blossoms so near to Christmas. A visitor from Italy called on me last week, his attention being drawn to the large trees of *Acacia dealbata* now showing their little round buds conspicuously and early this mild season. Many *Veronicas*, including the variegated-leaved variety, are in full bloom. These make the garden quite gay, and certainly their colours are very clear in blue, red, crimson, white, pink and other shades.

Hydrangeas are also blooming, their blue and pink flowers being of very clear tones. A plant of *Solanum jasminoides* is a wealth of blossom on a north wall.

Roses in the open, including the varieties Hugh Dickson, George Dickson, Mme. Abel Chateauay Souv. d'Elise Vardon, Souv. de la Malmaison, Dorothy, Hiawatha and Philadelphia, have continued in flower up to the present, giving really good blooms. Chrysanthemums out of doors have given the best display for many years past. A large plant of white *Marguerite* is covered with flowers, and is about twenty-four feet in circumference.

I was in another local garden a few days recently and saw some Black Currant bushes which were infested with big bud mite. Some buds were developing, and I saw a normal bud putting forth a new leaf. Many Apple trees retain their leaves, but pruning has been done irrespective of this.

These statements may seem almost incredible to many whose time is occupied in gardening in less favoured parts. J. J. Gribble, *Penlee Estate Gardens, Penzance.*



FIG. 143.—A RHODODENDRON (ARBOREUM VAR.?) IN FULL BLOOM IN A PENZANCE GARDEN IN DECEMBER.

it is in respect of his knowledge and the work he has done in this department of Botany that the Society has elected him a Fellow.

A Gardeners' Pocket Diary.—The R.H.S. Gardeners' Diary for 1921, published by Messrs. Charles Letts and Co., is of a convenient size for the pocket and provides a ready means for recording events or referring to tables and statistics on horticultural matters. The amount of useful information in the first part of the book constitutes a reliable calendar of garden operations, whilst the lists of varieties of fruits, flowers and vegetables represent the best for all purposes. Pages are specially ruled for compiling data, such as records of the fruit garden, interesting plants seen at flower shows and various memoranda; whilst others are for the recording of monthly cash accounts. The meetings of the Royal Horticultural Society throughout the year are given in black type in the general calendar, where space is left each day for entering engagements. The diary is edited by Mr. W. R. Dykes, Secretary of the Royal

description. For if these constructions be erected on wrong principles (which is too often the case), the gardener who has the management of them is generally the first sufferer; for, if the plants, etc., under his charge indicate by their appearance that something is wrong, it is more likely to be attributed to mismanagement on his part than to the bad construction of the house they inhabit. Too many gardeners know, unfortunately, what it is to labour under the disadvantages of a deficiency of ventilation, heating, etc. G.—[We nearly agree in "G.'s" remarks. Landscape gardening, if not a mere accomplishment, is at least a subject which only persons having great opportunities can profitably study. We, too, say study well the rule and compass, and learn how to make good geometrical gardens, rather than bad landscape ones. Fifty—nay, five hundred—of the former are wanted for one of the latter; and no greater mistake has been committed than disarding, so much as has been the case, the fine old plans of geometrical gardens. The barbarous things that we now see in small places are usually miserable attempts at compromise between the picturesque and the symmetrical—an elephant's head upon a monkey's shoulders.]—*Gard. Chron.*, December 27, 1845.

* Can the Probable Fertility of a Soil be Predicted from Biological Data? P. S. Burgess, Exp. Studies of Hawaiian Sugar Planters Assoc., *Soil Science*, VI., 6, 1918.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castelford, Chepstow.

Calanthe.—The early-flowering varieties of the vestita group of *Calanthes*, with the popular hybrid *C. Veitchii*, are making a fine display; the flowers will remain in full beauty for a long period if the plants are staged in a house having a slightly lower temperature than the one they occupied; the atmosphere should not be over-charged with moisture. The roots will need but little water, and when the spikes are cut the plants need a decided rest of two or three months duration. A dry shelf or a similar position in the *Cattleya* house will suit them admirably, water being entirely withheld. If space is scarce, the pseudo-bulbs may be turned out of their pots, shaken free of the soil, and placed closely together in boxes with a little dry sand around their base to keep them upright. At the same time examine the pseudo-bulbs for scale insects, and if present, remove the scale with a sponge or brush dipped in a weak solution of insecticide. The late-flowering forms of *C. Regneri* are pushing up their spikes, and therefore, should still be kept moist at the roots.

Miltonia vexillaria.—Plants of this Orchid are growing steadily, and root action is evident, therefore sufficient water should be afforded to keep the soil moist, but not saturated. The base of the new shoots should be examined occasionally for an outer sheath, which must be split open and gently pulled off, or the roots will fail to enter the compost. It will also be found that the young leaves frequently adhere to each other, and, unless they are carefully separated with the handle of a budding knife, they will become crippled. At this season the atmosphere of the house should be kept less moist, and a little fresh air admitted whenever possible. Failure to attend to these details, and over-watering the roots, are usually the causes of the tips of the leaves damping off. Keep the young growths free from thrips.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Figs.—Pot trees, if thoroughly pot-bound, as all early forcing Figs should be, will be ready for starting into growth. If they can be partly plunged and syringed judiciously with tepid water, the buds will swell freely. The best time to syringe the trees is about noon, when the ventilation should be reduced a little, not so much to raise the temperature as to secure a moist, genial atmosphere favourable to the development of the young leaves and the swelling of the fruit. When this stage is reached the trees will make rapid progress, especially if the arrangement of the pots upon fixed pedestals favours frequent turning and renovation of the fermenting material. About this time, too, an application of a weak liquid stimulant may be given and continued once or twice weekly. The mean temperature may range from 50° to 55° by night and 60° to 65° by day, more or less according to the weather; it is better to err on the safe side than hurry the trees through the early days of forcing.

The Grape Room.—At this season Grapes will keep equally as well in bottles as on the vines, besides reducing the fuel bill. The room in which they are placed should be well ventilated, dry and frost-proof, with a temperature ranging about 45°. A dry, calm day should be chosen for cutting the bunches, which should be done with all the wood that can be spared to ensure its passing well down into the water, that beyond the bunch being left intact. A close watch must be maintained, not only for waste of water, but also for faulty berries which may have escaped notice at the time the bunches were cut for storing.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wentoe Castle, near Cardiff.

A Retrospect.—In the South Wales district an exceptionally mild winter was followed by a wet spring and a summer with a temperature considerably below the normal. On account of the wet condition of the ground sowing and planting were unavoidably delayed in spring, especially where the soil was of a heavy nature. The crops eventually had to be planted in conditions that were not ideal. Fungous diseases have been very prevalent. The yield of Potatoes was much below the average, the blight in some cases was noticeable on the haulms at the end of June; this, combined with late planting, was responsible for light crops. Victory, Kerr's Pink, Majestic and The Ally, varieties immune to wart disease, produced the best results and also showed resisting powers to late blight in a marked degree. Onion Mildew also was very prevalent, but as the weather was continuously wet at the time the spores did not spread rapidly, consequently the tops held out longer than usual and the bulbs attained a fair size before harvesting was imperative. Celery rust has been more than usually common, and I have noticed that white varieties of Celery were, in the majority of cases, the first to be attacked, which suggests that these sorts are more susceptible to disease than the red. A general complaint throughout the district is the partial failure of the tap-root crops, it being the exception to see a really good bed. Peas and Beans yielded well, but were a fortnight later than usual in coming into bearing. The autumn has been very favourable to gardening and crops sown and planted after the lifting of early Potatoes, as well as Brassicas and Leeks, have produced excellent results, and appearances point to plentiful supplies of all kinds of winter vegetables. To sum up, the early part of the season was anything but ideal, and much effort was required to obtain good results, but, fortunately, the fine autumn compensated for the difficulties experienced earlier in the year.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Begonias.—Plants of the Gloire de Lorraine type should, as they get past their best, be removed from the show house. To prepare them for propagation the shoots should be slightly shortened, and the roots kept somewhat dry for a few weeks. With this treatment shoots suitable for use as cuttings will develop at the base of the plant. Some cultivators contend that better plants are produced by means of leaf cuttings; yet I have never been able to detect any difference in the plants so raised; and ordinary cuttings have the advantage of developing much faster than leaf cuttings. Success depends largely on securing the right sort of cutting, viz., young growth from the base of the stock plants. Much also depends on healthy stock that is not exhausted by a too prolonged period of flowering. The variety Mrs. Petersen is rather slow growing, and if good plants are to be produced in one season, cuttings should be inserted towards the end of November and throughout December. The other section of winter-flowering Begonias, as represented by Mrs. Heal, Elatior and Exquisite, should, as they pass out of flower, be removed to a pit or house where they may be kept fairly dry, and where the temperature is about 50° to 55°.

Abutilon.—Indoor winter-flowering climbers, whether for the stove or greenhouse, are by no means plentiful, but *Abutilon insigne* has been flowering at Kew for several weeks. It is a most valuable subject for furnishing a rafter in the conservatory. For this purpose its habit is ideal, the slender, flowering shoots hanging down as in a regular curtain, the purplish crimson flowers, with deeper veining, being produced in wonderful profusion. Even if it never flowered, this fine species is worth growing for its foliage alone. *A. vexillarium* and its variegated variety are also ideal sub-

jects as roof climbers, their long, slender-growing shoots rendering them specially suitable for the purpose. Golden Fleece, *Boule de Nieve* and Fire King are garden varieties specially suited for training on the roof rafters, or, perhaps, better still, for covering a back wall, as their habit, unless thinly trained, is somewhat dense for the roof. By judicious pruning and thinning, the plants will flower continuously throughout the year.

THE FLOWER GARDEN.

By SIDNEY LUGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Avenues.—Undulating ground and curved ways do not afford a clear perspective, and such sites are thus unsuitable for the planting of avenues; this is particularly noticeable in regard to large forest trees. Thorns are adaptable to somewhat short, curved grass drives, but are undoubtedly more effective when grouped along the route at considerable distances apart. Elms should never be employed for the purpose of avenues, owing to their tendency to shed large limbs as the sap rises. A long, treble avenue of Lime or Beech, on an even gradient leading up to a mansion, is very imposing. Dignity is sacrificed by mixed planting, and this should not be countenanced if a noble effect is desired. Careful calculations are necessary in arriving at the distances between stations, as the growth of most trees varies in different localities; planting may be done at half the final distance for immediate effect.

Winter Jasmine.—Flowering sprays of yellow Jasmine are very decorative when arranged sparingly in silver goblets and placed in proximity to hanging glass crystals. Select suitable twigs with the buds about to open, and thus prolong the length of flowering.

Seasonable Remarks.—The autumn season has been exceptionally open, and general garden operations have proceeded apace. Depressions in the lawn, pathway drains, and the re-gravelling of paths may receive attention. Young specimen trees and standard Roses should be afforded new supports if necessary, and sundials, valuable bowls and ornaments require suitable protection from damage by frost. Evergreens and berried subjects may be cut and dressed in readiness for the Christmas festival, and garden seats, wheel and hand-barrows painted during wet days. Everything which promotes tidiness and tends to efficiency in the garden should be accomplished.

HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Potash for Fruit Trees.—Kainit provides potash, and should be applied at the rate of 4 oz. to each large tree and 2 oz. to smaller bushes. It should be scattered evenly over the root area, so far as the branches extend. For orchard trees the whole surface may be treated in this way, and the fertiliser should be applied some time during the present month at the rate of 8 cwt. per acre.

A Retrospect.—The past season has not been one of the best for the fruiting of Apples and Pears, and only in a few instances have the crops been anything approaching normal. Many complaints have reached me with regard to the fruit not keeping well, but in my own case I find no cause for complaint. All bush and small fruits appear to have been good in most places. Fruit trees, on the whole, have been free from insect pests: caterpillars especially were not so troublesome as they were in the preceding year. Apple scab and leaf spot were present on some varieties of Apples, and the many wet days that we experienced during April prevented the spraying of the trees against these diseases. October and November were free from excessive rains, which has been all in favour of the early transplanting of bush fruits and other trees. Owing to the fine weather grease bands have become dry and a fresh dressing of grease should be given.

EDITORIAL NOTICE.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

THE PASS OF THE WINDS AND WATERS--II.*

THE scenery now changed abruptly; the valley opened out, and the gloomy forests gave place to smiling meadows; for the sun came through and lit up the scene. Water flowed everywhere; ten thousand singing rills seemed to well up from these matted mountains and plunge down through the forest. There was no path, and we waded up the main stream, over our ankles in the sparkling water, walled in by Bamboo. Here and there grew clusters of *Primula helodoxa*, drooping daffodil-coloured flowers over the brimming water; and presently we came to a meadow congested with *Primula Beejiana*, its staring magenta flowers massed in one screaming phalanx of colour. It is only when met with in a wild state, with all the panorama of mountains for its background, that it is beautiful; in this immense wilderness, the shrill colour is softened and hushed into harmony with the whole. But the most beautiful plant met with was a Meadow Rue, which hid shyly amongst the Bamboos lining the stream. Its ivory-white flowers, borne singly, were unusually large, few in number, and hung in the apple-green, ferny foliage like stars; indeed, I called it not inaptly the Snowflake Meadow Rue, for these large, white corollas, scattered singly through the leaves and nodding in the breeze, looked very like snow flakes drifting through a leafy tree. It was not a common plant, but it grew here and there in the shade of the Bamboos.

At last we left the stream, broke through the Bamboo screen, and emerged once more into open meadow. Camp was pitched on a boss of limestone which cropped out above the marsh, and we took stock of our position. Not far above us a limestone cliff in a semi-circle of forested mountains, marked the position of the pass, which crossed the range at its foot. The ranges were striped with belts of Bamboo, which clustered thicker in the valleys and fringed the streams, impenetrable, aggressive, disputing the ground with forest above and with meadow below. The knoll on which we were perched was covered with wild Strawberries—*Fragaria nilgerrensis*—of most excellent flavour. There are two species of *Fragaria* commonly met with on the North-East Frontier. *F. nilgerrensis*, with white fruits, sweet and well flavoured, occurs in open situations from about 6,000 feet up to about 8,000 feet. The other species, with smaller, carmine fruits, is found along shady banks at somewhat lower elevations; the fruits are tasteless and of no value.

We now set out to climb the last thousand feet to the pass. Ascending sharply, we found ourselves in a forest of mighty Conifers (*Pseudotsuga* and *Abies*), and *Rhododendrons*, amongst which *R. sino-grande* was conspicuous by reason of its enormous leaves. All the forest was festooned with Moss; it felted the tree trunks, and clung like fur to the Bamboos. High up on the trees, too, was growing a white-flowered *Coelogyne* in compact clumps (*C. corymbosa*, Lindl.). It has rather the appearance of a *Pleione*, the short scapes springing from the crowded tubers bearing one or two flowers only.

The lower lip has a stripe of chocolate-brown and yellow. *Coelogyne corymbosa* may be found as high as 9,000 feet in the forest, and in sheltered places may be hardy in this country.

Near the pass I found a yellow-flowered *Aristolochia*. There is a second species with quite remarkable flowers found at rather lower elevations in the rain forest—one of the few lianas met with above 7,000 feet. There was a marsh at the summit of the pass (9,000 feet), but nothing was in flower. The surrounding forest was composed chiefly of *Rhododendrons* and Bamboo, with a few Conifers, Oaks, Birch, Magnolia and Maple. Everything was bearded with Moss, and there was little undergrowth except Ferns; but *Primula helodoxa* flourished in the open, wet glades.

Returning to camp, we were plagued by blood-blister flies while the daylight lasted, and by sand flies and mosquitoes after dark. Our camp lay in the hollow of a great bowl, down the sides of which streamed innumerable rivulets, and where these slackened their pace on reaching the bottom of the bowl, Bamboos grew thickly. This dwarf Bamboo revels on the



Fig. 144.—*PRIMULA WINTERI* FLOWERING IN DECEMBER IN THE ALPINE HOUSE AT WISLEY (SEE P. 311).

North-East Frontier, threatening to overwhelm everything; it invaded our amphitheatre from every side, and within its close meshes, in the bottom of the bowl, lay lagoons of brilliant mead. Here grew bushes and shrubs scattered amongst the flowers: Buckthorn and Rose, Wayfaring Tree, Barberry, Currant, Honey-suckle, Hydrangea, and others. But there is nothing like the variety of Barberry, Honey-suckle and *Cotoneaster* in these mountains that we find in Western Yunnan; they seem to reach their full development in China, and on the Burma Frontier we are but on the fringes of their home.

Not far from our camp was a second limestone bluff, breaking out in shrill yellow between the dark green hills; but the Bamboo belt had to be crossed before it could be reached. This cliff rose up naked as a reef washed by a Bamboo sea foaming into splashes of colour where the *Rhododendrons* clung to its foot. There was no way through the dense Bamboo entanglement save following up one of the many streams; and plunging in I set out for the spot, and was instantly swallowed up. Pushing my way through, crawling on hands and knees where the streamlets died out and the Bamboo brake triumphed completely, I at length reached the edge of the bowl, and struggled up into the more open forest; then set to work picking off the ticks and leeches which had fastened themselves to me in the passage of

the obstacle. An hour's climb up a steep slope clothed largely with Oaks and *Rhododendrons* convinced me that I had actually ascended the wrong peak; and there was nothing for it but to return to camp and start again. This I did, and on the following day, taking my bearings a little more carefully beforehand, I set out a second time for the limestone cliff—so near yet so elusive, and found an easy way through the Bamboo belt to its foot.

Climbing up through the forest again I presently came on a huge plant of *Primula sylvicola*; in the dark reeking atmosphere it formed a cluster of great coarse leaves from which sprang but few flowering scapes—all the energy seemed to have gone into the manufacture of foliage. At last I reached the scarp, which now resolved itself into a series of short precipices separated by narrow, tree-clad ledges, along which it was just possible to scramble. At the foot of the cliff grew the little, white-flowered *Androsace axillaris*, familiar in Yunnan, where it often covers the ground in thin woods. In mossy nooks up on the rocks was *Primula fragilis*, a minute stoloniferous plant. It belongs to the Yunnanensis section, and forms a moss-like coating over the limestone; as in its nearest allies, *R. membranifolia* and *P. yunnanensis*, the dried brown leaves remain clinging to the thin rhizomes, and the plant retains water like a sponge. The flowers are inconspicuous, pale purple. The next noteworthy plant was a grotesque, liver-coloured Slipper Orchid (*Cypripedium* sp.) springing almost scapeless from between a pair of broadly heart-shaped, glistening leaves which lie flat on the ground. In stature it is a dwarf; but the single bloom is remarkably large and bloated, resembling a fat chin sunk as it were in meditation upon the folds of an ample neck. The twin leaves, too, are large, so that the whole plant suggests deformity, a complete incongruity in the proportions of its parts. This Orchid was rare, but scattered plants were found on the limestone rock. Towards the summit of the peak were small *Rhododendron* trees, bearing fine trusses of white flowers (*R. megacalyx*?). The summit itself, though not above 9,000 feet, was covered with dwarfed shrubs of *Cotoneaster*, yellow Jasmine, *Dipelta*, and others.

I got back to camp in the afternoon thoroughly soaked, but well satisfied to have seen something of the limestone flora; for that rock, so peculiarly the home of good alpine plants, is not common on the North-East Frontier; and nowhere does it crop out at high altitudes.

Returning from the Feng-shui-ling, I found a glorious crimson *Rhododendron* in flower in the forest. This was a new species, *R. facetum*; and the Nutmeg *Rhododendron* (*R. megacalyx*) scented the path.

In the shade of the forest were pink and white Begonias, but they have small flowers; and an occasional species of *Chirita* whose pale, pouting perianths spring from a rosette of rough leaves. In the gloom of the forest there are not many flowers, even at this altitude; a few Zingiberaceae, Orchidaceae and Liliaceae; with species of *Impatiens*, *Arisaema* and *Strobilanthes*—these are all beside the plants above mentioned. It must be remembered that in winter the snow creeps down to 7,000 feet and even lower, in these hills, so that much of the forest is under snow, for a few days at least. Yet there is no lack of epiphytes, in spite of the obvious difficulty of getting water during the winter. F. Kingdon Ward.

* "The Pass of the Winds and Waters, No. 1," appeared in *Gard. Chron.*, Nov. 13, p. 240.

THE ALPINE GARDEN.

THE ALPINE COLUMBINE.

LOOKING through that attractive and interesting book, *The Alpine Flora*, by MM. Correvon and Robert, I came upon a delightful coloured plate from a water-colour drawing of the Alpine Columbine, *Aquilegia alpina*. It well portrays the pretty foliage and charming blue and white flowers of this species, one which is admired by all who know the true plant, and is cherished by those who are fortunate enough to have it in their gardens. I said the blue and white form is the one most commonly seen in gardens, but M. Correvon insists that the typical form has its sepals of "a glorious blue" and the petals of "purest azure." That the plant is a lovely one may be learned from the fact that M. Correvon calls it "perhaps the most delicate and charming of Alpines." It is, however, unfortunate that it is all too short-lived, and is practically best treated as a biennial. Seeds should be sown every year, and it is a matter for some consideration that even where a plant survives its first flowering it is not so fine the following season. Unfortunately, too, the *Aquilegias* hybridise so freely among themselves through their attractions for insects that seeds in a garden can hardly be depended on to come true to the type if other Columbines are cultivated there, and seeds from wild plants are to be preferred when obtainable. To give the plant a chance of longer life it should be grown in stony soil and top-dressed in autumn with sandy loam and grit. Such a lovely Columbine deserves special care in its cultivation. *S. Arnott.*

PRIMULA WINTERI.

THIS beautiful *Primula* is a most attractive subject for the Alpine house. The plant illustrated in Fig. 144 is flowering in a pan in the Alpine house at Wisley and was among the plants which opened the season there. Though only a little earlier than others growing in the open, it surpasses them at present in quality, having escaped the cold fogs which at one time appeared likely to injure those growing in more exposed situations. The colour of the flowers is lavender-lilac. *A. E. Sims, Wisley.*

A CANADIAN PARK.

STANLEY PARK, which may best be described as a virgin forest some 1,000 acres in extent, is pleasantly situated on the Bay of Vancouver, British Columbia. The park is chiefly remarkable for its natural beauty and as containing some of the largest trees of their kind that are to be found in the far west. The Douglas Fir, Giant Cedar (*Thuja plicata*) and Hemlock (*Tsuga*) occur in plenty and have all attained to colossal proportions, specimens over 200 feet in height and 50 feet in girth of stem being commonly met with. Applying the tape to one of the biggest Cedars I found the stem, circumference at 5 feet up to be 55 feet 7 inches, and that of a Douglas Fir 47 feet, while Hemlocks of immense height and girth were everywhere to be met with.

In order to give some idea of the immense size of trees and quantity of timber in a given area we measured off a patch of ground 30 yards by 12 yards, on which thirteen trees—nine Douglas Firs and four Cypressess—were growing and found the average stem girth to be 18½ feet, while the cubic contents were computed at fully 9,000 feet. Frequently trees of immense size are growing within a few feet of each other, a Cedar and Douglas Fir, each over 200 feet high and 8 feet in diameter of stem, being 57 inches apart.

With few exceptions the older trees show signs of decay; many are already dead, and the tops of others destitute of living twigs for often a fourth of their height. The trunks taper very gradually, the stem diameter at 100 feet in height being little less than at the ground level, and usually with small, narrow crowns of

branches. To the uninitiated in Canadian forests the vast quantities of dead and dying timber come as a surprise, trees of all sizes, many containing over 1,000 cubic feet of timber lying side by side or across each other in tangled masses and the most hopeless confusion. From some of the fallen and rapidly decaying trunks, self-sown seedlings of other trees have sprung up to a great height. The quiet and solitude of such a forest cannot adequately be described, for both bird and animal life are strangely absent, the woodpecker, crow and chipmunk being the only living creatures that we encountered in the two days' ramble through one of these primeval woods.

The Douglas Fir, which is the staple timber producer for purely commercial purposes, is widely and plentifully distributed, and, particularly near the coast, attains to giant proportions. The timber is chiefly valuable for structural work, being largely employed in house and

that stands fully 80 feet high, on which is carved in a beautiful, though highly grotesque manner, heads of eagles and thunder birds, all with huge beaks; also animals, plants and numerous eye-shaped carvings of immense size to fill up the intervening spaces.

Forest fires have been unusually plentiful during the past summer, and when viewed as a spectacular sight are certainly magnificent, as huge trees towering 150 feet and upwards may frequently be seen blazing to their tops like giant torches. Seedlings of the Douglas Fir, Western Red Cedar and Hemlock in all stages of growth spring up in the wildest profusion wherever a clearance in the woodlands has been brought about by fire or otherwise, taking possession of dead and dying stumps and prostrate rotting trees, and this is seen also in the trails that have been cleared by lumbermen for conveying their timber to the shore or loading stations.

The underwood of a Canadian forest is



FIG. 145.—CHRYSANthemum HELEN MARGERISON; FLOWERS PALE PEARLY-PINK, F.C.C., NATIONAL CHRYSANthemum SOCIETY, 1920. SHOWN BY MESSRS. KEITH LUXFORD AND CO.

shipbuilding, also by the various railway companies for fencing and ties, as well as in the making of wharves and bridges. The timber of the Douglas Fir is now being extensively employed as an interior finish for dwelling-houses and office buildings, in fact it is fast supplanting other woods that up to a few years ago were largely used for these purposes.

Both the Hemlock and Giant Cedar come next in importance for the value of timber produced, the latter used largely for shingles and the Hemlock for a great variety of useful purposes. The weirdly carved totem poles that may be seen in the quaint Indian villages scattered along the coast of British Columbia are virtually the "Burke's Peerage" of the Indian tribes, and represent events closely associated with the history of the tribe and stories of the deeds of the brave that have been handed down from one generation to another. One of the largest is cut out of the stem of a giant *Thuja*

peculiarly interesting, as, in addition to several species of Willow, *Pyrus* and *Prunus*, *Linnaea borealis* grows everywhere around Vancouver in the richest profusion, creeping over rotting tree stumps and carpeting the trails and shady banks with its creeping, wiry stems that are furnished with glossy green leaves and pairs of fragrant nodding, pale-pink bells that are veined with the most delicate rose. Both the white and Mountain Rhododendron and the woolly Labrador Tea Plant (*Ledum latifolium*) were met with in some plenty, as were also the red-stemmed Dogwood (*Cornus stolonifera*) and Huckleberry (*Vaccinium*). The Bunchberry (*Cornus canadensis*) is a little gem, while the false Solomon's Seal (*Smilacina amplexicaulis*) with its big red berries lights up the open woodland wherever it is found. The Salmon Berry (*Rubus nutkanus*) and at least two species of *Spiraea* are fairly abundant even in the densest and darkest parts of the woodland. *A. D. Webster.*

SELAGINELLAS.

THESE beautiful Fern allies are not so often grown as their merits deserve. They require a thoroughly moist atmosphere, and in most cases a minimum temperature of 60°, to which, however, the common dwarf variety, *Selaginella kraussiana* is an exception, for it is so nearly hardy that it occasionally survives the winter in the open in the south of our islands, and may be used to clothe a shady, sheltered corner of the rock border in Devonshire gardens.

Many of the larger species possess the graceful outlines of the Adiantum Ferns, with the addition, in the case of *S. tassellata*, of an elegant fringe. This plant is a native of Brazil, and grows to a height of about 9 in.; its remarkable beauty should ensure it a place in every collection. *S. grandis*, from Borneo, is somewhat similar, but a little taller, and both should be grown in shallow saucers containing small lumps of peat mixed with a little leaf-mould and charcoal, keeping the whole constantly moist.

Two of the Selaginellas combine rich colour with their other merits, the finest of these being known as *S. caesia arborea laevigata* (syn. *Willdenovii altissima*), a climber, which, if grown in the shade, produces long trails of great elegance in a beautiful shade of metallic blue. It should be planted in a moist corner or a grotto, shaded from the direct rays of the sun, when it will assume its most perfect colouring. *S. inaequalifolia* (perelegans), which grows to the height of eighteen inches, is a native of Ceylon, and has stems of pinkish red. Both these species require a warm house.

Amongst the few Selaginellas which may be grown in an ordinary greenhouse with a minimum warmth of 50°, *S. Braunii* is undoubtedly the best, for it does well under the same conditions as *Adiantum Feros*, which it somewhat resembles. This valuable plant should be in every greenhouse, and may be grown in a pot as though it were a Fern, adding broken crocks and lumps of charcoal to a compost consisting of equal parts loam, leaf-mould and peat in small pieces. *I. L. Richmond.*

TREES AND SHRUBS.

PYRUS MEINICHII.

ABOUT sixteen years ago a tree was introduced from Norway under the above name. I have found a wild bush on the Leatherhead Downs, which resembles *P. Meinichii* so closely that it might well be considered the same thing, the only difference being that the berries of this bush are a little smaller. It bloomed profusely but set only a few berries. The tree is believed to be of hybrid origin, and possibly a seedling from *P. pinnatifida*, the supposed parents of which were *P. intermedia* and *P. Aucuparia*. Taking that for granted the question arises whether this bush originated from *P. pinnatifida*, or was the result from a fresh crossing of the two parents named. In any case, both parents grow close by with no evidence of *P. pinnatifida*. That it is self sown there is no reason to doubt, for it shares six square feet of space with a Yew, a Beech and a wild Rose. *P. Meinichii* closely resembles *P. intermedia* in leaf and berry. The leaves are short and broad, like those of the last named, but the lowest pair of lobes is cut down to the midrib, and the next pair are often very deeply cut. *J. F.*

BERBERIS FRANCISCI-FERDINANDI.

AMONG the numerous deciduous Berberis of recent introduction from Western China, *B. Francisci-Ferdinandi* is very distinct. Mr. E. H. Wilson first sent home seeds in 1904, and again in 1908. The plant is an elegant bush of regular, rounded outline, some 5 feet in height, and of moderately vigorous growth. The many-flowered panicles of yellow blossoms are followed in autumn by rich carmine-coloured fruits, $\frac{3}{8}$ -inch long, many of the panicles carrying upwards of fifty fruits. *A. O.*

HORTICULTURAL BOOKS.

IF the idea of a book store devoted exclusively to botanical and horticultural publications, as set forth by *A Book Collector* (see p. 219), meets with approval on your side of the Atlantic, how much more it should appeal to American buyers, who necessarily order the great proportion of their out-of-print books from England or the Continent.

For us there is no happy chance of straying into a book shop and picking up some long-sought treasure; we are compelled to buy most of the very old, and many quite modern, books from priced lists or place standing orders for them with a dealer or agent. For the private individual who needs a few gardening books for personal use the situation is nearly hopeless. Perhaps in childlike confidence he places an order, and if he is so fortunate as to get a quotation within a reasonable time, and can afford the price, he takes the book regardless of the fact that its price may be excessive; if on the other hand the figure seems to him prohibitive he may lose the opportunity, even though the work may be rare and the price altogether reasonable.

We librarians have a slight advantage over the average private buyer, as we get a larger variety of offers and have some criteria for selection, though the process takes much time and yields inadequate results, and on the whole we react in much the same way; if a book is for some reason absolutely indispensable we take the first chance of getting it; but sometimes we have compunctions about wasting the taxpayers' money, and let slip some really important but expensive work.

Some time since an American dealer offered to our library a copy of Langley's *New Principles of Gardening*, for a hundred dollars, but luckily we were feeling poor and prudent at the time, so had courage to let it go, and a London firm with a reputation for fairly high prices later advertised the work for £7 10s., while shortly thereafter another copy was quoted at a little more than £6. How far such tactics would continue successful is a matter of conjecture, but it is certain that most American buyers have no better idea of proper prices than is afforded by *Book Prices Current*, which of course does not cover the bulk of low-priced publications. I am not considering the real collector, that is the person who buys books primarily with the object of owning, rather than using them. Perhaps we do not have a great many collectors, in this sense, of horticultural books in the United States; but while unlimited funds can accomplish a great deal, it is hard to see how much genuine collecting can be done without opportunity for personal examination of books. Certainly librarians in this country are not as a rule collectors, they are merely buyers of books—a very different matter. On the whole it is practically impossible for us to get adequate knowledge of the rarity, the actual value, or proper price of the bulk of European horticultural books not in print, and a bookseller who could supply this knowledge would be of immense assistance to American buyers, and ought to profit by American transactions.

If, as collectors, you look on your side of the Atlantic rather coldly on the American trade, rather grudging the treasures that occasionally journey overseas, it must be remembered that the present situation, in favouring the purchaser with unlimited funds, whether library or individual, rather than the discriminating buyer, actually encourages profiteering in the book trade (an average American of to-day cannot get through a conversation without using either the word "bolshhevik" or "prolitter"), and is not particularly favourable to the collector at home. Moreover, it is probable that, as *A Book Collector* intimates, the bulk of a special bookseller's business would not consist in rarities, but in fairly common and even recent publications, which nevertheless, being out of print, are now so difficult to locate, while as to the importance of standardising their prices there can be no dispute. *An American Librarian.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

THE late Mr. Arthur Chapman.—The news of the death of the late Mr. Arthur Chapman will be learned by his many friends with great grief. For nearly forty years I have had his intimate friendship, and I have never met a man who had a kinder disposition or was more ready to help others with advice or in any other way he possibly could. He entered Westonbirt as a foreman, and during his long service there has seen the gardens "grow up," so to speak, for most of the improvements in these famous gardens have been carried out under his supervision. I have been a frequent visitor to Westonbirt during nearly forty years and have had the opportunity of seeing a great many of the improvements carried out under his directions. Westonbirt possesses one of the most extensive and choice collections of shrubs and trees and other exotic plants in the country, and Mr. Chapman could tell one their history and all that was worth knowing about them. *T. A. Cincinester.*

—It was with the deepest regret that I learned of the loss of one of my oldest friends, and one of England's best gardeners, in the decease of Mr. A. Chapman. It is many years since we lived together in the bothy at what was, in those times, one of the best-kept gardens in the country, viz., that of the late Rt. Hon. W. H. Smith, at Greenlands, Henley-on-Thames. Serving together under the late Mr. W. H. Good, one of the best known all-round gardeners of the day, the friendship Mr. Chapman and I then formed has never been marred in the slightest. His kindly nature and his enthusiasm for horticulture, endeared him to all whose pleasure it was to come in contact with him. Mr. Chapman was a well-informed man, for he was deeply read in many subjects. The magnificent collection of *Amaryllis*, which has been so often staged before the public by Mr. Chapman, will be acknowledged as second to none, and the large number of sterling novelties raised by him will be a lasting memorial to his skill. Everything he took in hand he was most keen and enthusiastic about, and possibly one of his chief delights was the carrying out of the training of fruit trees on walls, in which work he was a master craftsman. Mr. Chapman was a straightforward and good-natured man, and will be greatly missed by all who knew him. May I take this occasion to offer my deepest sympathy to his bereaved wife and family, who mourn the loss of a dearly-loved husband and father, even as I sadly mourn the loss of a very dear friend? *Edwin Beckett, F.M.H.*

Taiwania cryptomerioides.—In reference to Mr. Elwes' note on page 277, I may, perhaps, be allowed to state that I am not the author of the name "*Formosan Redwood*" for this new Conifer. It occurs in a note on the tree in the *Journal of the Arnold Arboretum*, Vol. I., p. 66, where the *Taiwania* is alluded to as the "*Redwood of Formosa*, the tallest tree in the world outside of California and Australia, and in its young state one of the most beautiful of Conifers." As the tree is said by Mr. Wilson to be singularly like an old *Cryptomeria*, I had an idea that the name "*Redwood*" might refer to the colour of the trunk; but of this, of course, I cannot be sure. *W. J. Bean, Royal Botanic Gardens, Kew.*

Laurustinus.—The note on the flowering of the *Laurustinus* in the gardens at Tynningham by Mr. Brotherton (see page 268) is interesting. I have noticed for some few seasons that specimens grown as standards are more consistent in blooming than those grown in bush form. The standards may be of various heights, to suit the requirements of the situation, and the heads require very little pruning. Grown as such, they are valuable for planting as specimens in various positions, especially in the foreground of dark, green-leaved species in the wild garden. It is a matter of surprise to me that the *Laurustinus*, grown in standard form, is not more frequently met with. *H. E. Brooks, York.*

NEGLECTED FARM ORCHARDS.

THE report issued by the Advisory Committee of the Ministry of Agriculture on the farm orchards of the West of England states that Apple plantations have been allowed to fall into a lamentable state of neglect, as farmers are not inclined to treat orcharding seriously. They do not look upon their orchards as a commercial proposition, and therefore give them the smallest measure of attention. On only a few farms in the area in question was it found that more than a general interest was taken in orchard cultivation. That good husbandry in orcharding is just as necessary to obtain profitable returns as it is in the case of arable land is a forgotten truism.

Early in the eighteenth century, cider-making was encouraged, so as to lessen the consumption of French wines. For that purpose trees were planted, and the industry flourished greatly. Later, with the increased use of beer and the introduction of cheap Australian wines, the cider industry received a check. Many farmers let their orchards go altogether, and others regrafted, but did not replant, their trees. So complete has the neglect become that in the majority of cases the occupier does not even know the true description of the individual varieties, and the more general custom is to classify the fruit according to the purpose for which it is used, e.g., "potting" (that is, for market) or "cider." The latter group is sometimes subdivided into "sweets," "bitter-sweets," or "sours"—descriptive of the type of cider produced by the variety.

On the question of renovation, various points call for remark. Sometimes the state of the orchard is so bad that only a highly skilled fruit-grower could decide how the restoration can best be carried out in a rapid and effective manner. In other cases the neglect is of such long standing that the work is far too formidable to be undertaken by a tenant with only a short term before him.

In the Wedmore district of Somerset there are curious "let down" orchards, not met with elsewhere. In this neighbourhood beds of stone are found a few feet below the surface, and in order to guard special fields from being quarried, many tenants have planted a few isolated trees, for a local custom prevents the quarrying of any land planted with fruit. These fields have now the appearance of old orchards in which only a few trees remain.

Since the last cider "boom," which occurred so far back as 1850, neglect and consequent degeneration have become gradually accentuated. The lack of interest is not on the part of farmers alone; it is also shared by landlords. During the last few generations there has been little change and no progress in orchard husbandry. Improved methods, such as those followed on specialised fruit farms, have never been adopted, and there is a serious dearth of skilled pruners and grafters. To some extent the landlords and land stewards have been responsible in part for this decline; they have not insisted on the observance of the clauses in the agreements relating to the cultivation of orchards.

It is obvious that before any step towards improvement can be expected, it must be demonstrated conclusively to growers that their orchards can be made one of the most profitable sections of farm industry, and that, too, without very much trouble. Once this has been accomplished, it will still be necessary to institute a comprehensive scheme of instruction in orchard management, for until this has come into operation little progress can be made. The first aim of such instruction must be to give farmers and landlords thorough knowledge of the principles underlying profitable treatment, and to teach them how to relieve the shortage of skilled labour. The whole question is worth the most serious consideration, for while these once valuable orchards remain unproductive the country and the agriculturist are losing the profit that would certainly accrue from an important side industry.

GRAPES FROM YOUNG VINES.

YOUR correspondent, Mr. W. J. Irvine, commenting on the prize-winning Grapes exhibited at the Sheffield show (see p. 292), mentions that they "were all cut from vines planted one year and nine months previously," and asks "Is this a record in young vines fruiting?"

Mr. Irvine also states that "previous to planting them in the new vinery, they were grown out-of-doors in ordinary garden soil," but omits to say how old the vines were when transplanted in the houses. Without knowing the age of the vines, it is difficult to make comparisons, but I feel sure that Mr. Irvine will be interested in an account of an experiment I made several years ago.

I took charge of the gardens here in May, 1905, and planted vines in a range of four vineries in the spring of 1906.

I had previously bought strong, fruiting canes from Messrs. J. Veitch and Sons, Chelsea, to be ready for planting in the spring. In January of 1906 I started, in a very warm house, eyes of several varieties of Grapes in small 60-

greatly interested as to whether the vines would show any ill-effects from this early fruiting, but though some varieties have since been dispensed with, the majority of those vines are still producing excellent crops, and it has been a disappointment to me that for certain reasons Grapes have not been exhibited from these gardens for ten years.

The late Mr. R. Hooper-Pearson visited these gardens in July, 1907, and was much interested in these Grapes, and in his articles on "Eastwell Park Gardens," in *Gard. Chron.*, November 16 and November 23 of that year, referred to them, the house of Muscat of Alexandria, which had been treated exactly as I have described, being illustrated in the last-mentioned number, the photograph being taken when the Grapes were green (see Fig 146).

I may add that a small, green vine was planted alternately with a two-year-old fruiting cane in three of the houses, and in a year or two little or no difference could be seen in the appearance of the vines.

I was so impressed with the simplicity and success of the experiment, that I should never willingly go back to what

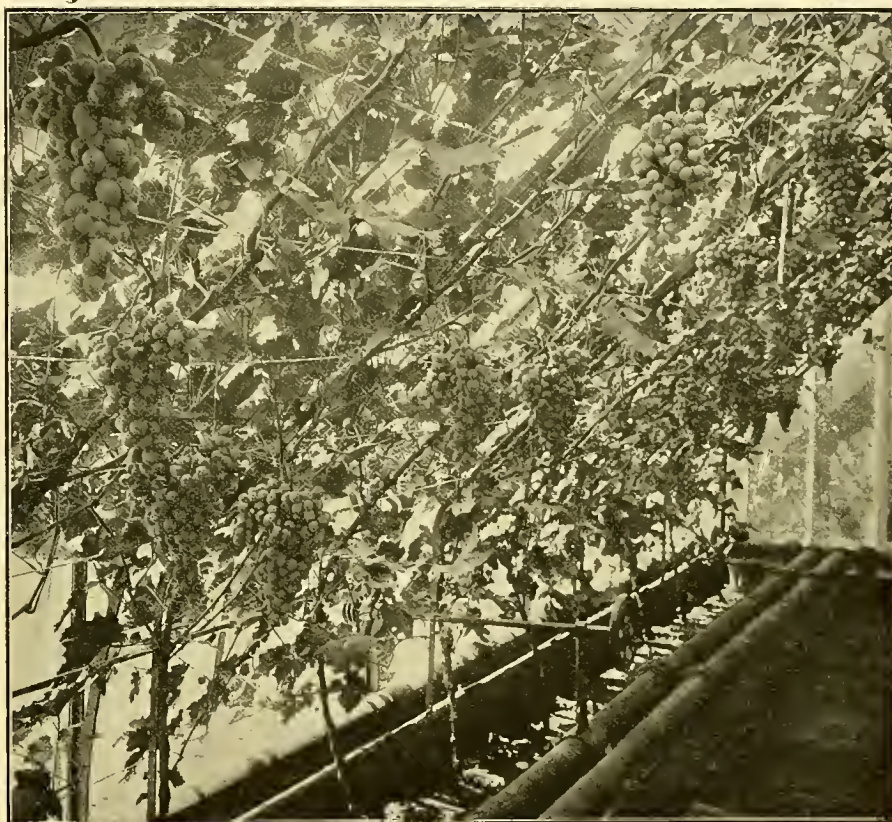


FIG. 146.—MUSCAT OF ALEXANDRIA VINES FRUITING AT SIXTEEN MONTHS OLD.

sized pots. When they had rooted they were potted into 48-sized pots. The strong, fruiting canes were started in the usual way, and when the shoots had commenced to develop the roots were washed in tepid water, and the vines planted in a border previously prepared for them.

The small vines in 48-sized pots, grown from eyes, were planted out at the same time. Without exception all grew wonderfully well that season, and ripened fairly early. They were pruned and started at the usual time for an early house.

Their growth surpassed all expectations the next season, and the vines were allowed to carry a few bunches. At the Richmond Show on June 26, 1907, bunches of Black Hamburgh and Foster's Seedling from these vines were both awarded first prizes (see *Gard. Chron.*, July 6, 1907), that is, in just under 18 months from the eye. Those who knew of this experiment were

I suppose is the usual system, i.e., to plant one or two-year-old vines from pots. May I add that it has always appeared to me a great waste of time to spend a year or two trying to renovate old vines which have fallen into an unhealthy condition, when young vines may be grown so quickly and inexpensively, unless, of course, there is a sentimental reason for retaining the old vines. J. G. Weston, Eastwell Park Gardens, Kent.

Our Almanac.—We shall publish in an early issue of the New Year a "Gardeners' Chronicle" Almanac for the year 1921. In order to make it as useful as possible as a reference, we shall be obliged if secretaries of Horticultural, Botanical and Allied Societies, or any of our correspondents, will send us IMMEDIATE INFORMATION of all fixtures for the coming year.

Obituary.

Frederick George Tutchet.—It is with regret that we announce the death of Mr. Frederick George Tutchet, an assistant inspector of the Ministry of Agriculture, son of Mr. Joseph Tutchet, nurseryman. Deceased was 32 years of age, a native of Kingsweston, near Bristol, Gloucestershire. He entered the horticultural profession at an early age, first at Holway Nurseries, Taunton, Somerset, and subsequently was journeyman at Cardiff Castle, the seat of the Marquis of Bute. After a period of two years at Cardiff Castle he went to Kew where he remained from September, 1902, to June, 1905. Leaving Kew he became foreman in the Botanic Gardens, Cambridge, where he remained for two years. He subsequently became inspector to the County Council of Cambridgeshire, a post he held for a period of about four years. Eventually he was appointed assistant inspector in the Horticultural Division of the Ministry. During his work with the latter he showed great interest in plant diseases, especially those affecting fruit trees. He collected some uncommon and rare species of fungi, for which he was awarded a certificate from Kew. He was regarded as a most careful observer and loyal officer.

John Urquhart.—We regret to learn of the death of Mr. John Urquhart, for many years gardener at Hoddon Castle, Dumfriesshire, the property of E. J. Brook, Esq. Mr. Urquhart, who had attained an advanced age, was an able manager of the glass department, and had the satisfaction of being successful with numerous subjects, which ordinarily prove difficult to manage. The same skill was displayed in the fruit and vegetable departments and outdoor flower gardening was carried on with marked success by him. A fine collection of hardy flowers flourished under his care, and the magnificent rock garden at Hoddon Castle was a source of great pleasure and pride to him. He was highly esteemed by all who knew him, as a man not only of great ability as a horticulturist, but also as one of the highest integrity. His funeral took place on December 14, and was largely attended.

TRADE NOTE.

WE are asked by the Secretary of the British Florists' Federation to state that many of the railway companies are now running fast goods trains to the principal provincial towns, and growers and distributors of pot plants are advised that whenever possible, they should utilise such service in place of the passenger train service, because the former is cheaper and the goods are only a few hours longer on the journey. It will be necessary, however, for growers and distributors to make enquiries as to the available goods service before consigning goods.

REPLIES.

ITALIAN OIL JARS.

YOUR correspondent may procure jars of this kind from the Clewer Nurseries, Maidenhead Road, Windsor, or from the China Tea Stores, Grainger Street, Newcastle-on-Tyne. Messrs. Finney and Co., Ltd., seed merchants, Grainger Street, Newcastle, would also probably be able to procure them. J. S.

ROSES FOR HEDGES.

R. V. H. will find Fellenberg, Gruss an Teplitz and Provence excellent for his purpose, especially Fellenberg. Cramoisi Supérieure, the bush form, will make a good subject to form a hedge in a warm situation. *Magister Palae*.

ANSWERS TO CORRESPONDENTS.

COMMERCIAL CULTURE OF LILY OF THE VALLEY:

A. G. H. Both your northern and southern slopes may be utilised for growing Lily of the Valley out-of-doors on a commercial basis. The plants on the southern slope would be somewhat earlier than those on the northern and would thus ensure a longer period of cutting. Shade is not absolutely essential, but if given when the plants are well in leaf, it would be advantageous, because it would produce a softer green in the foliage, longer stems and cleaner flowers. The shade should not be dense, or the crop would be spoiled. The best time for planting is from October to the end of January, when the weather is favourable. The German varieties are excellent for forcing and may also be grown out of doors. The variety Victoria is much stronger and larger-flowered than the ordinary form, but does not produce so many bells on the stems. The best time to stimulate Lily of the Valley is from October to Christmas, when well-rotted manure or any other organic manure, should be spread over the beds, with an occasional dressing of a good artificial compounded manure.

DOUBLE PRIMULA OBEONICA: A. D. C. The first double form of *Primula obeonica* was obtained by Messrs. Vilmorin-Andrieux et Cie., Paris, in 1901. It turned up again in the Belgian section at the International Horticultural Exhibition at Chelsea, in 1912. Since then it appeared in the garden of Mrs. Blair, Burton Cluses, Blakewell, where Mr. James Dunn said it arose as a chance seedling in the autumn of 1913, or early in January, 1914. This was illustrated in *Gard. Chron.* of September 5, 1914, p. 181, Fig. 72. This form was semi-double and apparently closely similar to the specimens received from you. The supernumerary petals arise from the connectives of the anthers, and vary greatly in form. The anthers are attached to the sides of these extra petals and contain plenty of pollen. The stigma and ovary appear perfect, so that there is a chance of raising new and improved varieties from the plants now in bloom, especially if you cross-fertilise any good forms that may exist in the hatch of seedlings.

HEATING A LEAN-TO STOVE: W. R. A. To maintain your plant stove at the temperature you state, you would require 270 ft. of 4-in. pipes, viz., one flow and return each side, and the same in the centre. You might, by good stoking not require the pipes in the centre. No. 11c Robin Hood boiler is quoted to heat 2,735 ft. of 4-in. piping. If in any doubt consult the Thames Bank Iron Company, Upper Ground Street, London.

HIRING OF LAND FOR ALLOTMENTS BY BOROUGH AND URBAN DISTRICT COUNCILS: P. R. A Council can make an Order authorising them to hire land compulsorily for a period of not less than 14 years and not more than 35 years. The amount of the rent will be fixed in default of agreement by an arbitrator, who is required to take into consideration the rent (if any) at which the land has been let, the annual value at which it is assessed for income-tax or rating, the loss (if any) caused to the owner by severance, and the terms and conditions of the hiring, but he may not make any allowance in respect of any use to which the land might otherwise be put by the owner during the term of hiring, being a use in respect of which the owner is entitled to resume possession, i.e., building, mining or other industrial purposes, or for roads necessary therefore. The compulsory hiring provisions of the Acts enables a Council therefore to obtain a tenancy of land which can be renewed by the Council without the owners consent, at a fair rent fixed without regard to any immediate or prospective value which the land may possess for building, mining or other industrial purposes, but subject to the landlord's right of resumption if he satisfies the Ministry that he requires the land for such purposes. The Small Holdings and Allotments Acts of 1908, as amended by the

Act of 1919, enables the notice of resumption to be such as is prescribed by the Hiring Order, but so as not to require a longer notice than twelve months.

NAMES OF PLANTS: G. R. 1, *Cassia corymbosa*; 2, *Streptosolen Jamesonii*.—W. C. *Eleagnus macrophylla*. R. T. 1, *Polypodium Phyllitidis*; 2, *P. aureum*; 3, *Nephrolepis*, sp. probably *acuta*; 4, *Davallia canariense*; 5, *Acrostichum* sp.; 6, *Aspidium* sp.; 7, *A. falcatum*; 8, *Nephrodium molle*; 9, *Pteris serrulata* var.; 10, *P. s. var.*; 11, *P. cretica* var.; 12, *Nephrolepis exaltata*. The specimens were too scrappy for easy identification. W. C. Marden. *Cotoneaster Henryana*.

NAMES OF FRUITS: E. J. S. 1, Northern Greening (small green); 2, Herefordshire Pearmain; 3, not recognised; 4, Flower of Kent (white ribbed). J. MacL. Pear Ne Plus Meuris. W. W. C. Bramley's Seedling.

NIGHT SOIL AND GYPSUM: B.—Night soil is rich in nitrogen especially the urine. For use as a top-dressing it should be mixed with dry soil to absorb the liquid. Gypsum (sulphate of lime) mixed with it at the rate of 1 lb. to a barrowful gives excellent results owing to its preservative effect upon ammonia. If the liquid is utilised as liquid manure, gypsum added at the rate of four ounces to a gallon will neutralise the caustic effects produced by the fermentation of the urine and prevent damage being caused to the roots of plants. For use this must be diluted to the colour of weak coffee.

PEAR BEURRE CLAIRGEAU: Exhibitor. This variety of Pear is not considered of first quality, and is excluded by the R.H.S. as a dessert Pear at its exhibitions. Unless, as in the case of the R.H.S. schedule, this variety is especially excluded as a dessert sort, the judges would have no option but to recognise it as a dessert variety. It is not included in Hogg's *Fruit Manual* among the culinary sorts. Hogg describes it as a handsome and showy Pear; ripe in November, its appearance being its greatest recommendation.

PRUNING A FIG TREE: R. J. B. The Fig tree may be pruned at once. Neglect in pruning results in overcrowding, with unripened growth; and immature wood is always unfruitful. Thin out the exhausted and barren branches, retain the ripest wood and fruit-bearing shoots, and tie these in position about six inches apart.

SALT AS A MANURIAL DRESSING FOR FRUIT TREES:—Salt is not in itself a plant food. Its action is indirect, its value depending entirely on its power of bringing into solution reserves of insoluble potash in the soil, and thus making them available for the use of crops. The effect is the same as if a light dressing of a potash fertiliser were given. Hence the value of salt to potash-loving vegetables. Whilst salt would do no harm on land intended for fruit trees, we do not think it would give any noticeable benefit. For fruit trees we would much prefer a dressing of lime or ground chalk, which would have quite as much effect as salt in releasing potash, besides being of direct benefit to the trees.

SULPHATE OF AMMONIA: H. W. Sulphate of ammonia and nitrate of soda are similar, in both being nitrogenous manures, and especially valuable for leaf-producing crops. Both have to be converted into nitrates before becoming available as plant-food—lime being the principal agent of conversion. Nitrate of soda rapidly becomes available as a plant food, and to prevent waste the applications should be small and frequent. Sulphate of ammonia applied in one dressing in the spring is steadily liberated and nitrates are available over a fairly long period.

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Communications Received.—H. W. T.—F. B.—A. D. T.—P. C. M. V.—S. A. S.—A. W. S.—S.—E. M.—J. A. P.—H. E. D.—J. C. W. H. W.—T. P.—G. W. B.—W. S.—A. S.—W. R.

